

MAY 8 1939



American Foundryman

A PUBLICATION PRESENTING ASSOCIATION AND CHAPTER ACTIVITIES



Convention Interest in A. F. A. Safety and Hygiene Display

Convention Features, See Page 2—Program Schedule, See Page
8—Two Chapters Hold Regional Conferences, See Pages 16-18.

Pre-Convention Issue

*May
1939*

The Annual Convention



A GAIN we approach an Annual Convention of the American Foundrymen's Association. The 1939 convention will be held at Cincinnati on May 15-18.

As we examine the program we are impressed by the wealth of information which will be available to those attending the meeting. Look over this program and you must decide that you cannot afford to be absent. The information which you will receive and the stimulation from such a meeting will make your attendance a worth while investment.

Besides the technical sessions, we have the shop operation courses and the plant inspection trips. And let us not forget the value of meeting with the fellow members of our own industry.

It has taken much work to develop this program. The various A. F. A. committees have been successful in preparing for you a well balanced meeting. The authors of the papers will give you the results of many years of investigation, practice and study. The shop operation courses will furnish a wealth of practical and progressive material. Applying this to your own work will result in profit to yourself and your company.

Let me call your attention to something new in our program this year. It is the first A. F. A. lecture course. A series of three lectures will be given, one each day, on "The Microscope in Elementary Cast Iron Metallurgy," by R. M. Allen. At the conclusion of the lectures, the material will be made available to you in book form. We know that this will be a valuable addition to our foundry literature. Come to the first lecture Monday evening and you will not miss the rest.

If you have not already done so, make your reservation for Cincinnati, May 15-18.

Hyman Bornstein

H. Bornstein, Director, A. F. A.

Mr. Bornstein is director of laboratories, Deere and Company, Moline, Ill., immediate past president and director of A. F. A. He is also chairman of A. F. A. Board of Awards and a member of the Association's Advisory Committee. Mr. Bornstein has served on numerous committees of the Association and for years has been active in committee work, having served as chairman of the Gray Iron Division and of other important committees.

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American Foundryman



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Final Plans for Cincinnati Convention Made

THE 43rd annual convention of the American Foundrymen's Association will open at 10 a. m., Monday, May 15, at the Hotel Gibson, Cincinnati, O. Presiding at the opening session will be President Marshall Post, Birdsboro Steel Foundry and Machine Co., Birdsboro, Pa. Following this opening session the four days of the convention will be devoted to many technical and management and shop practice sessions, extensive plant visitation and social gatherings.

Local Committees

The Cincinnati District Chapter, acting as host, has organized local committees on reception, plant visitation, golf, transportation and ladies' entertainment. The general convention committee is under the chairmanship of George A. Seyler, works manager, Lunkenheimer Co., with the Chapter chairman, Herman K. Ewig, foundry superintendent, Cincinnati Milling Machine Co., as chairman of the reception committee. Others with Mr. Seyler on the general convention committee are Ray Redmond, Buckeye Foundry Co., as vice chairman; Edw. B. Hausfeld, president, Ohio Pattern Works and Foundry Co., as secretary; Robert Frankl, president, Superior Pattern works, as treasurer; Harold Ritter, Oberhelman-Ritter Co., as chairman, hotel committee; Edw. T. Korten, Reliable Pattern and Casting Co., as chairman, publicity committee; A. Oberhelman, Oberhelman-Ritter Co., as chairman, golf committee, and Philip H. Cone, assistant general manager, Cincinnati Milling Machine Co., as chairman, plant visitation committee.

Annual Dinner

The annual dinner of the Association is to be held the evening of May 17. A feature of the dinner will be the presentation of three major awards of the Association. To Harold S. Falk, vice president, Falk Corporation, Milwaukee, the

John A. Penton Gold Medal is to be presented in recognition of his leadership in promoting foundry apprentice training. Donald J. Campbell is to be presented with the W. H. McFadden Gold Medal as president of the Campbell Wyant & Cannon Foundry Co., Muskegon, Mich., in recognition of the achievements of this company in developing casting manufacturing processes. James R. Allan, assistant manager of the industrial engineering and construction department, International Harvester Co., Chicago, is to receive the J. H. Whiting Gold Medal in recognition of his engineering contributions to the Association and the foundry industry.

Non-Ferrous Division Dinner

The Non-Ferrous Division, under the chairmanship of Harold J. Roast, Canadian Bronze Co., Montreal, is organizing a social get-together dinner for Tuesday evening, May 16. As a special attraction for the members and their ladies at this dinner an address is to be given by William B. Stout, president, Stout Engineering Laboratories, Dearborn, Mich. Mr. Stout will talk on "The Romance of Aviation."

Technical Program

The technical program covers a wide range of papers and committee reports which will be presented in some thirty sessions. A detailed schedule of the program is given on pages 8 to 12.

Lecture Course

An innovation this year is a three-session instructional lecture course on "The Microscope in Elementary Cast Iron Metallurgy." This course is to be given by Roy M. Allen, noted metallurgical consultant, Bloomfield, N. J. Mr. Allen has revised and amplified into book form material which he presented before the 1931 A. F. A. convention. Mr. Allen's original material proved of such outstanding value that he was sought as the author of the first lecture course of the Association.

Steel Melting Symposium

For the first time in many years the Steel Division is giving special attention to a comparison of melting practices in different types of furnaces—acid and basic open hearth, acid and basic electric, converter and induction. Each process is treated by an authority in his field and the whole will be given at the symposium on the last day of the convention.

Training Methods

Apprentice and foreman training is given a prominent place in the schedule, two sessions being listed. Plans of the Walworth Co., Caterpillar Tractor Co., Fairbanks, Morse and Co. and the Cincinnati Milling Machine Co. will be discussed by executives of each of these corporations.

AMERICAN FOUNDRYMAN

Cincinnati's Skyline Through Piers of Suspension Bridge.



Shop Operation Course

The Gray Iron Division is again putting an extensive program of technical and shop practice sessions on. It is continuing its annual shop operation course, which this year will extend over four sessions. Cupola practice will be the theme of the course.

Public Relations

The factor of the open house in establishing acquaintanceship and good public relations will be discussed at one of the most important sessions of the week. Addresses will be given by P. E. Rentschler, president of the Hamilton Foundry & Machine Co., and W. H. Doerfner, manager, Saginaw Malleable Iron Division, General Motors Co.

Apprentice Contest Display

Through the efforts of the A. F. A. committee on apprentice training, many foundries and foundry organizations have been participating in local apprentice molding and pattern making competitions. The winners of these local contests will have their castings and patterns sent to the Cincinnati convention where they will be entered in the national contest. At that time prizes provided by the A. F. A. Board of Awards will be provided in each of the four groups, namely, gray iron molding, steel molding, non-ferrous molding and pattern making. These contests which have been held for several years are attracting widespread attention because of the excellence of the work displayed by the apprentices.

Plant Visitation to Feature Convention Week

THE annual convention will be opened and closed with specially arranged inspection of two prominent industrial plants. During the remaining days of the meeting, other plants of particular interest to foundrymen will be open for individual and small group inspection.

Cincinnati Milling Machine Company Trip

On the afternoon of Monday, May 15, members of the Association will be the guests of the Cincinnati Milling Machine Company, at which time the various departments of the plant will be inspected. This company, which was started in 1884, is one of the country's largest manufacturers of machine tools, and at present has more than 16½ acres of floor space. Its excellently equipped foundry turns out machine tool castings, supplying parts for milling, broaching, grinding, die sinking, lapping and cutting machines manufactured by the firm.

Trip to Hamilton

The convention will be closed Thursday afternoon, May 18, with a trip through the coke and blast furnace plant of the Hamilton Coke and Iron Division of the American Rolling Mill Company at Hamilton, Ohio. Here the two blast furnaces and 60 coke ovens will be inspected. Those desiring can also go on to the plant at Middletown, Ohio, where steel is manufactured in open hearth furnaces and rolled

on a continuous mill into finished products. Arrangements have been made by the company to entertain the guests wishing to remain over for the evening at the Hamilton Country Club with a buffet supper. During the afternoon the ladies will also be entertained at the Club.

Other Plant Visitations

Other plants in the Cincinnati district inviting inspection during the week are the Lunkenheimer Company, Williamson Heater Company, Hamilton Foundry and Machine Company, General Machinery Company, Buckeye Foundry Company, Oberhelman-Ritter Company, Peerless Foundry Company, Sawbrook Steel Casting Company, Ohio Pattern Works and Foundry Company, Cincinnati Steel Castings Company, D. T. Williams Valve Company, Edna Brass Mfg. Company, N. Ransohoff, Inc., and the Griffin Wheel Company. The Wheeling Steel Company will also furnish transportation to their Portsmouth, Ohio, plant.

Plant Visitation Committee

The plant visitation committee of the Cincinnati District A. F. A. Chapter is under the chairmanship of Philip Cone, Cincinnati Milling Machine Company. Serving with him are L. LaVoie, Griffin Wheel Company; P. E. Rentschler, Hamilton Foundry & Machine Company; H. J. McFarlin, Lunken-

heimer Company; R. Ebersole, Miller & Company; Alex Hawes, Wheeling Steel Company; J. A. Bouffard, Hamilton Coke and Iron Div., American Rolling Mill Co.; W. M. Gilbert, Buckeye Foundry Co.; M. Fleming, Hickman, Williams & Co., and Delvin Orr, Ranson and Orr Company.

Wheeling Steel Corporation Sunday Trip

The Wheeling Steel Corporation is extending an invitation to members of the Association to make an inspection of their

Cincinnati Tyler-Davidson Fountain with Carew Tower in Background.



plant at Portsmouth, Ohio, on Sunday, May 14, the day before the convention formally opens. The inspection will include the By-Product Coke Plant, Blast Furnace and Steel Mill.

Those wishing to leave with the group from Cincinnati will assemble at the Hotel Gibson

Sunday morning, with transportation being furnished those desiring it. Busses will leave the hotel at 8:30 a. m., arriving at Portsmouth at 11:30 a. m., where the party will assemble at the Coke Plant. After the inspection tour a luncheon will be held at the Portsmouth Country Club,

with provision being made for golf for anyone desiring to play.

Those driving direct are requested to meet the party at the Coke Plant at 11:30 a. m. All wishing to make the trip should notify Alex B. Hawes, Wheeling Steel Corp., 2901 Carew Tower, Cincinnati.

Three Medal Awards to be Made at Cincinnati Convention

RECOGNITION of outstanding service to the Association and the foundry industry will be made at the annual dinner, Cincinnati convention, on the recommendation of the Board of Awards. The awards are to be made to Harold S. Falk, Falk Corporation, Milwaukee; Donald J. Campbell of Campbell, Wyant & Cannon Foundry Co., Muskegon, and James R. Allan, International Harvester Co., Chicago.

The W. H. McFadden Gold Medal is being given to Mr. Campbell as president of the Campbell, Wyant & Cannon Foundry Co. in recognition of the outstanding accomplishments of this company in developing casting manufacturing processes.

Mr. Falk is being awarded the John A. Penton Gold Medal in recognition of his leadership in promoting apprentice training.

HAROLD S. FALK

HAROLD SANDS FALK, awarded the John A. Penton Gold Medal, is vice president and general manager of the Falk Corporation, Milwaukee, Wis. The award to Mr. Falk is based on his constant and conspicuous leadership in promoting general interest in apprentice training and especially foundry training. Mr. Falk has not only made the training program in his plant one of the best in a state noted for its training efforts but has been a leader over the years in this work by presenting numerous addresses before national associations, showing the economic and humanitarian advantages and possibilities of having organized training programs in industrial plants.

Mr. Falk received his technical training in the engineering school of the University of Wisconsin, graduating in 1906 with a bachelor of science degree. While in college he spent his summer vacations at the Falk

Corporation as foundry helper, then at molding, machinist work, pattern works, open-hearth helper, in the laboratory, and other shop positions. After graduation he joined the Falk Company,



Harold S. Falk

first serving in the maintenance department and, successively, as assistant to the foundry superintendent, as assistant foundry superintendent and then as superintendent.

To Mr. Allan the J. H. Whiting Gold Medal is being awarded in recognition of his engineering contributions to the Association and the foundry industry.

These medals are three of the four major awards of the Association made possible by an awards fund contributed in 1920 by four of the earlier officers of the Association, these men being Joseph S. Seaman, third president; John A. Penton, first secretary; W. H. McFadden, tenth president, and J. H. Whiting, vice president in 1906. The awards fund is administered by a Board of Awards, consisting of the last seven living past presidents. H. Bornstein, as the immediate past president, is chairman of the Board this year. Serving with him are past presidents Jas. L. Wick, Jr., D. M. Avey, Frank J. Lanahan, T. S. Hammond, E. H. Ballard and N. K. B. Patch.

About 1914 Mr. Falk became general superintendent of the entire plant, serving in that capacity until 1922, when he was made vice president and works manager, having been elected to the board of directors in 1918. Mr. Falk early became interested in apprentice training and in promoting this cause in industry. In recognition of this work he was, several years ago, granted an honorary degree of master of science by Marquette University.

Mr. Falk has been an active worker in trade and technical association activities, having served on the Board of Directors of the American Foundrymen's Association and on various boards and committees of the National Founders' Association, Steel Founders' Society of America, the American Society of Mechanical Engineers and many other associations.

AMERICAN FOUNDRYMAN

JAMES R. ALLAN

JAMES RAMSAY ALLAN, awarded the J. H. Whiting Gold Medal, is assistant manager of the industrial engineering and construction department of the International Harvester Co., Chicago. The award to Mr. Allan is based on his outstanding service to the Association over many years as a committee leader along engineering lines, developing standards for refractories and codes of recommended practices applying to dust suppression equipment. Mr. Allan is now serving as a director of the Association and in addition to his work with the A.F.A. has been an active and valuable member of committees of other technical and engineering associations.

Mr. Allan has been connected in various capacities with the



James R. Allan

International Harvester Co., Chicago, for 29 years. He was born in Chicago, attended the public schools and Lewis Institute of that city. Entering the employ of the International Harvester Co., after receiving his engineering training at Lewis Institute, he was first employed as a draftsman and later as efficiency engineer. Then, for several years Mr. Allan was assistant superintendent of the McCormick Works, in charge of the malleable foundry. Following this connection with the McCormick Works, Mr. Allan was transferred to the industrial engineering department of the Harvester Co., and is now assistant man-

ager of the industrial engineering and construction department.

Mr. Allan is at present chairman of the A.F.A. Industrial Hygiene Codes Committee, of the Committee on Foundry Refractories. He represents the Association on the A.S.T.M. Committee on Refractories and the American Standards Association Committee on Safety Code for Exhaust Systems. He is also a member of and past chairman of the Joint Committee on Foundry Refractories, which promoted surveys of refractories for uses in the various branches of the industry, and was a member of the joint Committee on Survey of Electric Power Costs in the Foundry.

In addition to presenting papers to the A.F.A., Mr. Allan has presented technical papers before many other Associations, including the American Refractories Institute and the A.G.A.

DONALD J. CAMPBELL

DONALD JAMES CAMPBELL, awarded the W. H. McFadden Gold Medal as president of Campbell, Wyant & Cannon Foundry Co., in recognition of the developments of this company in casting manufacturing processes, has been president of the company since its incorporation in 1908 when he, together with Ira A. Wyant and George W. Cannon, all practical molders from Chicago, organized the company which from its first day's production of five tons has grown to one which during the rush period of 1929 turned out 550 tons a day. The original force comprised of the three partners has grown to one of a maximum of 2,500 men.

Back in 1905 these three foundrymen, all working in Chicago, met for the first time. They were ambitious and each shared the other's desire to own a foundry and try out their ideas for improving production methods then in vogue. They formed a partnership and their passion for experimentation has led to their developing many processes especially as related to motor car castings. In 1931 their first elec-

tric furnace was installed for the manufacture of special alloy castings, chiefly brake drums. They developed a process for interlining cast iron drums with



Donald J. Campbell

sheet steel by fusing the two metals, producing an ideal braking surface. A new plant designed particularly for brake drum production was built at Lansing as a joint undertaking with the Motor Wheel Corporation of that city and it has since turned out millions of brake drums by this centrifugal fusing process.

Electric furnace production was extended after 1931 to embrace the manufacture of camshafts, crank shafts and alloyed cast brake drums and hubs in combination as one casting. Their production also embraces a large department for interlining sleeves for cylinders. This foundry was the first to produce a V-8 motor block and crank case in a single casting, a product which has since been adopted by several large automotive manufacturers. From the beginning the company has maintained a research department, and this has led to pioneering work in the use of the spectrograph for chemical analysis of iron. With this process analysis of metal in the furnaces can be made before it is poured into molds.

Throughout their association these three men have maintained their broad vision of new methods and through their division of responsibilities have built up a personnel and an organization leading in the foundry field.

With Mr. Campbell as president in charge of development and special processes, Mr. Wyant as secretary and treasurer has charge of sales and metallurgy, while Mr. Cannon is vice president and general manager in charge of production. Associated with them are many men whom they have gathered around them to aid in production and development methods, whose able assistance is acknowledged freely by Messrs. Campbell, Wyant and Cannon.

Mr. Campbell is a Canadian by birth and the third generation of craftsmen devoted by family tradition to iron founding. At an early age he was an apprentice in a foundry and came up through the ranks of journeymen to the position he now occupies as chief executive of one of the largest foundries in the world. His furtherance of the foundry art is marked by over 150 patents, embracing both equipment and processes, relating largely to the automotive industry, notable among which are the substitution of green sand cores for dry sand in cylinder block casting, the originating and developing of the individually cast piston ring, cast camshafts and crankshafts, and amalgamation of cast iron liners and pressed steel shells by a process of fusing for brake drums, the centrifugal casting method of producing cylinder liners, light-weight pistons, the triplex method of alloyed metal production, and a very large number of varied designs in high speed and labor saving molding machines and associated equipment.

Study of Corrosion

DR. JAMES T. MacKENZIE, American Cast Iron Pipe Co., Birmingham, Alabama, has been appointed A.F.A. representative on the newly formed American Coordinating Committee on Corrosion. This committee is formed under the auspices of the American Society for Testing Materials. The committee will serve as a clearing house and coordinating agency for information on experience and

work in progress in the fields of corrosion and corrosion prevention.

This committee has formulated a questionnaire for reporting corrosion information and is circularizing the foundry industry for such information as it may have. Individuals who are interested in corrosion, have accumulated corrosion information, are now working on corro-

sion problems, or have such projects in view, are requested to write the American Foundrymen's Association to the attention of the technical secretary for a copy of the questionnaire.

The cooperation of members of the Association is requested in assisting the American Coordinating Committee on Corrosion in the preparation of its report.

Ladies' Entertainment Plans for Cincinnati Convention

EXTENSIVE plans to entertain the ladies during Convention Week have been well worked out by the Cincinnati convention committee. With Ray Redmond, Buckeye Foundry Company, as chairman, assisted by an excellent group of ladies of the Cincinnati area, the ladies' entertainment committee announces the following schedule of events:

Ladies Registration and Headquarters—Netherland Plaza Hotel

Monday, May 15—3 to 5 p.m.

Reception and tea — Netherland Plaza Hotel — Compliments of the American Foundrymen's Association.

Tuesday, May 16—Morning—Visit to Taft Museum.

Noon—Complimentary Luncheon—Netherland Plaza Hotel.

Afternoon—Ball Game—Cincinnati Reds vs. Boston (Complimentary). (For those preferring bridge to the ball game, tables of bridge will be arranged at the Netherland Plaza Hotel.)

Wednesday, May 17—Morning free.

Noon—Complimentary luncheon at Fox and Crow.

Evening—Annual A.F.A. Dinner and Dance—Hotel Gibson (Informal).

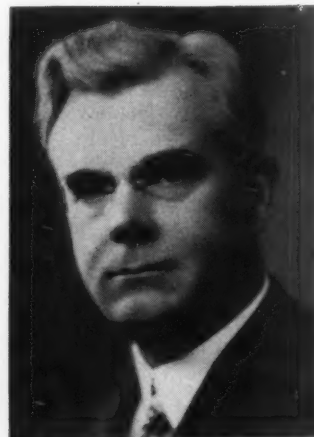
Thursday, May 18—Morning free.

Afternoon—Ladies will be entertained at Country Club, Hamilton, by the Pig Iron and Coke Division of the American Rolling Mill Co., while the men (and ladies, if they prefer) are on an inspection trip to the blast furnace and coke plant at Hamilton, or the continuous strip mill at Middletown, Ohio, to be followed by a buffet supper at the Country Club.

Roy M. Allen to Deliver Lectures

ROY MORRIS ALLEN, who is to present the first lecture course series before the Cincinnati convention, is consulting metallurgical engineer of Bloomfield, N. J. Mr. Allen was born in Coleville, Pa., and was educated in the public school of Butler, Pa., and in private laboratories. He has served 16 years as supervising engineer in the engineering department of the Bell System, now known as the Bell Telephone Laboratory. He has also served for some 12 years as consulting metallurgical engineer, several of which were as research metallurgist with the American Car and Foundry Co. Mr. Allen has produced a large

number of inventions, of which many, mechanical and electrical, are assigned to Western Electric



R. M. Allen

AMERICAN FOUNDRYMAN

Co. These include submarine detection apparatus developed during the World War.

He is the author of several works on microscopical subjects, with a manual of the microscope now in the process of publication. His paper before the A.F.A. convention in 1931 on "The Microscope in the Cast Iron Foundry" was received as one of unusual interest.

Mr. Allen is a member of the A.F.A., the American Institute of Mining and Metallurgical Engineers, the American Society for Testing Materials, being Chairman of A.S.T.M. sub-committee VII of Committee A-3. He is also a member of the New York Academy of Sciences, fellow and past president of the New York Microscopical Society, American Microscopical Society, Biological Photographic Association and the New York Mineralogical Club.

Mr. Allen's lectures will be given on the first three days of

the convention and will be entitled "The Microscope in Elementary Cast Iron Metallurgy." On the third day, following the completion of the lecture series, the subject matter will be available in book form.

To many foundrymen, the words "metallurgy" and "equilibrium diagram" have been either a source of awe or annoyance. Realizing this, Mr. Allen has written his book in simple terms that can be understood readily by practical foundrymen. The book includes discussions of the value of the microscope to the cast iron foundryman, the fundamentals of physical cast iron metallurgy, the effect of sulphur and phosphorous in cast iron, special cast irons, the cast iron equilibrium diagram, and the microscope and the technique of its use. Explanations are accompanied by beautiful photomicrographs which show the points the author makes and discusses.

French Exchange Paper to be Given by Delbart

GEORGES R. DELBART, chief engineer, technical service, Etablissements of Cail, France, is the author of the official exchange paper which is to be presented on behalf of the Association Technique de Fonderie de France (The French Foundry Technical Association). His paper will cover steel castings having high mechanical properties. The Association is indebted to W. H. Spencer,



G. R. Delbart

Sealed Power Co., Muskegon, Mich., for the translation of Mr. Delbart's paper.

Mr. Delbart was born in 1899 in the north of France. He received a Master of Science degree and at the same time was graduated as a chemical engineer from Lille University in 1921. After having spent some time in investigational work in the heavy industries of the Siege district in Belgium, he took up his first position as manager of the laboratory, Societe d'Escaut et Meuse at Anzin, France.

In 1926 he obtained his degree as Doctor of Science at the University of Lille and after having pursued some research work, both at the university and the works' laboratory, he took up the post of director of control and research work at Etablissements Cail, at Denain, in 1927. In 1929 he was put in charge of the steel works and steel foundry of Etablissements Cail, and eventually became chief engineer of the technical services of that company.

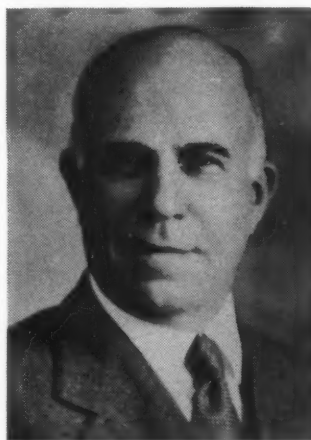
Mr. Delbart has published over 50 papers and articles on metallurgical subjects, some of which have been published in the United States.

Board of Awards Lecture to Be Given by Fred Clausen

FOR the annual convention business meeting the outstanding feature will be the second Annual Awards Lecture to be given by Fred H. Clausen, president, Van Brunt Manufacturing Co., Horicon, Wis. Mr. Clausen who has been very active in national manufacturing circles has chosen as the subject of his address—"Business Management Has a Job." The Association is especially fortunate to secure a speaker of Mr. Clausen's ability for this awards address.

Mr. Clausen is vice president of the Chamber of Commerce of the United States of America, a past president of the Wisconsin Manufacturers' Association and of the Board of Regents, University of Wisconsin. He is chairman of the board, Holeproof Hosiery Co., a director of Deere and Co. and vice president of the Farm Equipment Institute.

This awards lecture was instituted in 1938 to bring to the



F. H. Clausen

members of the Association at its annual business meeting outstanding presentations of general business and industrial problems. The first lecture, presented last year, was given by Chas. R. Hook, president, American Rolling Mill Co. and, at the time, president, National Association of Manufacturers.

Tentative Program

43rd Annual Convention—May 15 to 18

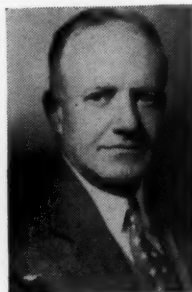
Monday, May 15

Registration—Members, Hotel Gibson, Foyer, Ball Room Floor; Ladies, Netherland Plaza.

10:00 AM Opening Session (*Gibson, Ball Room*).
Presiding—President Marshall Post, Birdsboro Steel Foundry and Machine Co., Birdsboro, Pa.
Announcements.
Greetings.
Responses.
President's Address.



**President
Marshall Post**



**Vice President
H. S. Washburn**

10:30 AM—Malleable Cast Iron (*Netherland Plaza, Private Dining Rooms A, B, C*).
Chairman: J. H. Lansing, Malleable Founders' Society, Cleveland.
10:30 AM *Atmosphere Control in Malleablizing*, by John Dow, Holcroft & Co., Cleveland, O.
11:00 AM *White Iron for Malleablizing*, by J. O. Klein, Texas Foundries, Inc., Lufkin, Texas.
11:30 AM *The Shearing of Malleable Iron Gates*, by S. D. Martin, Saginaw Malleable Iron Div., General Motors Corp., Saginaw, Mich.



J. H. Lansing



J. O. Klein



S. D. Martin

10:30 AM Non-Ferrous (*Gibson, Italian Room*).
Chairman: Wm. M. Ball, Jr., Edna Brass Mfg. Co., Cincinnati, O.
Co-Chairman: C. O. Thieme, H. Kramer & Co., Chicago, Ill.
10:30 AM *Production of Bronze Pressure Castings*, by D. Frank O'Connor, Walworth Co., Boston, Mass.



W. M. Ball, Jr.



C. O. Thieme



A. B. Kinzel

11:15 AM *Crucible Melting*, by G. K. Eggleston, Detroit Lubricator Co., Detroit, Mich.

10:30 AM Gray Iron Shop Course—Session 1 (*Gibson, Roof Foyer*).
Chairman: R. F. Hine, Studebaker Corp., South Bend, Ind.
Discussion Leader: Donald J. Reese, International Nickel Co., New York City.
Cupola Practice.

2:00 PM Special Works Visit to Cincinnati Milling Machine Co.



L. N. Shannon



P. C. DeBruyne



R. Webster

6:30 PM Malleable Round Table Meeting—Dinner Conference. (*Netherland Plaza, Private Dining Rooms A, B, C*).
Chairman: L. N. Shannon, Stockham Pipe Fittings Co., Birmingham, Ala.
Co-Chairman: P. C. DeBruyne, Moline Malleable Iron Co., St. Charles, Ill.
Informal Discussion on Current Practices.

8:00 PM Materials Handling (*Gibson, Della Robbia Room*).

Chairman: E. W. Beach, Campbell Wyant & Cannon Foundry Co., Muskegon, Mich.

Co-Chairman: Jas. Thomson, Continental Roll & Steel Foundry Co., East Chicago, Ind.

8:00 PM *Mold Equipment*, W. R. Jennings, John Deere Tractor Co., Waterloo, Iowa.

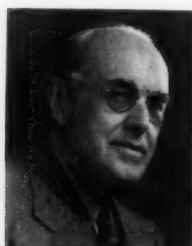
9:00 PM *Some Tests on the Effectiveness of Water Under High Pressure for Cleaning Castings*, by R. Webster, Hydroblast Corp., Chicago, Ill.

8:00 PM Non-Ferrous (*Gibson, Italian Room*).

Chairman: Harold J. Roast, Canadian Bronze Co., Montreal, P. Q., Canada.

Co-Chairman: Wm. J. Laird, Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

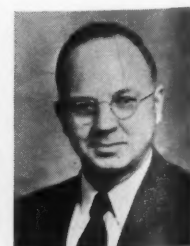
8:00 PM *Effects of Aluminum and Antimony on the Physical Properties of Red Cast Brass*, (85-5-5-5), by H. B. Gardner and C. M. Saeger, Jr., Bureau of Standards, Washington, D. C.



E. W. Beach



J. Thomson



W. R. Jennings

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H. J. Roast



H. B. Gardner



C. M. Saeger, Jr.



H. M. St. John



W. Romanoff



R. W. Parsons

8:45 PM *High Conductivity Copper Castings*, by A. B. Kinzel, Union Carbide & Carbon Research Labs., New York City.

9:30 PM *Non-Ferrous Division Annual Business Meeting*.

8:00 PM Lecture Course—Session 1 (*Gibson, Ball Room*).

Chairman: H. Bornstein, Deere & Co., Moline, Ill.
The Microscope in Elementary Cast Iron Metallurgy, by R. M. Allen, Bloomfield, N. J.

Tuesday, May 16

9:00 AM Gray Iron Shop Course—Session 2 (*Gibson Roof Foyer*).

Chairman: P. T. Bancroft, Moline, Ill.
Production of Uniform Dense Structures in High Test and Alloy Iron Castings, by M. A. Scott, Greenlee Foundry Co., Chicago, Ill.
Gates and Risers.



H. Bornstein



P. T. Bancroft



M. A. Scott

10:00 AM *Malleable*. (*Netherland Plaza, Private Dining Rooms A, B, C*).

Chairman: C. F. Joseph, Saginaw Mall. Iron Div., General Motors Corp., Saginaw, Mich.

Co-Chairman: R. Schneidewind, University of Michigan, Ann Arbor, Mich.

10:00 AM *Effects of Manganese on Second Stage Graphitization*, by D. P. Forbes, Gunitite Foundries, Rockford, Ill.

11:00 AM *Hydrogen in Solid White Cast Iron*, by H. A. Schwartz and G. M. Guiler, National Malleable & Steel Casting Co., Cleveland, O.

10:00 AM Gray Cast Iron (*Gibson, Ball Room*).

Chairman: F. J. Walls, International Nickel Co., Detroit, Mich.

Co-Chairman: W. R. Jennings, John Deere Tractor Works, Waterloo, Ia.

10:00 AM *A Scientific Approach to a Foundry Problem*, by L. A. Danse, Cadillac Motor Car Co., Detroit, Mich.



C. L. Joseph



R. Schneidewind



H. A. Schwartz



L. C. Wilson



P. Rentschler



W. H. Doerfner

2:00 PM *Safety and Hygiene* (*Gibson, Roof Foyer*).

Chairman: L. C. Wilson, Manager, Reading Steel Casting Div., American Chain and Cable Co., Reading, Pa.



F. Holthby



F. J. Walls



E. L. Roth

2:00 PM *The Establishment of a Safety and Hygiene Program in a Small Foundry*, by P. E. Rentschler, President, Hamilton Foundry & Machine Co., Hamilton, O.

3:00 PM *The Open House and Public Relations*, by W. H. Doerfner, Manager, Saginaw Malleable Iron Div., General Motors Corp., Saginaw, Mich.

2:00 PM *Castability of Metals (Gibson, Italian Room)*.

Chairman: W. H. Spencer, Sealed Power Corp., Muskegon, Mich.

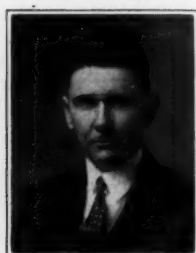
Co-Chairman: Geo. P. Halliwell, H. Kramer & Co., Chicago, Ill.

2:00 PM *Castability of Cast Steel*, by C. H. Lorig and E. C. Kron, Battelle Memorial Institute, Columbus, O.

2:30 PM *Effects of Superheating on the Castability and Physical Properties of Gray Iron*, by N. A. Ziegler and H. W. Northrup, Crane Co., Chicago, Ill.

3:00 PM *The Measurement of the Fluidity of Aluminum Alloys*, L. W. Eastwood, Aluminum Co. of America, Cleveland, O.

3:30 PM *Malleable Iron Castability Tests*, by E. J. Ash, University of Michigan, Ann Arbor, Mich.



W. H. Spencer



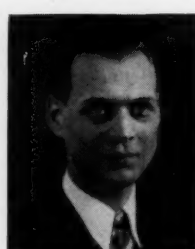
G. P. Halliwell



C. H. Lorig



F. G. Seifing



H. W. Northrup



N. A. Ziegler

4:00 PM *Lecture Course—Session 2 (Gibson, Ball Room)*.

Chairman: G. P. Phillips, International Harvester Co., Chicago.

The Microscope in Elementary Cast Iron Metallurgy, by R. M. Allen, Bloomfield, N. J.

6:00 PM *Engineering Instructors' Dinner (Gibson, Parlors R and S)*.

*Presiding—*F. G. Seifing, International Nickel Co., New York City.

6:00 PM *Conference of Chapter Delegates—Dinner (Gibson, Parlors, A-B)*.

6:30 PM *Committee on Classification of Graphite in Gray Iron*.

8:00 PM *Refractories (Gibson, Ball Room)*.

Chairman: E. J. Carmody, C. C. Kavin Co., Chicago.

Co-Chairman: A. H. Dierker, Ohio State University, Columbus, O.

8:00 PM *Plastic Cupola Patching*, by R. E. Wilke, John Deere Tractor Co., Waterloo, Iowa.

8:45 PM *Refractories in the Steel Foundry*, by A. V. Leun, Bethlehem Steel Co., Bethlehem, Pa.



E. J. Carmody



A. H. Dierker



R. L. Wilke

8:00 PM *Time Study (Gibson, Della Robbia Room)*.

Chairman: Frank Wartgow, American Steel Foundries, E. Chicago, Ind.

Co-Chairman: H. C. Robson, Continental Roll & Steel Foundry Co., E. Chicago, Ind.

Practical Approach to Motion and Time Study, by G. J. Stegemerten, Time Study and Methods Dept., Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Wednesday, May 17

8:00 AM *Gray Iron Shop Course—Session 3 (Gibson, Roof Foyer)*.

Chairman: K. H. Priestley, Eaton-Erb Foundry Co., Vassar, Mich.

Cupola Refractories and Figuring Mixes.

Discussion Leader: J. A. Bowers, American Cast Iron Pipe Co., Birmingham, Ala.



G. J. Stegemerten



K. H. Priestley



J. A. Bowers

9:00 AM *Gray Iron (Gibson, Ball Room)*.

Chairman: Jas. T. MacKenzie, American Cast Iron Pipe Co., Birmingham.

Co-Chairman: W. A. Hambley, Allis-Chalmers Mfg. Co., Milwaukee, Wis.

9:00 AM *Rapid Temperature Measurements of Cast Iron with an Immersion Thermocouple*, by F. Holtby, University of Minnesota, Minneapolis, Minn.

9:30 AM *Copper-Aluminum-Silicon Alloy Additions to Cast Iron*, by V. H. Schnee and T. Barlow, Battelle Memorial Institute, Columbus, O.

10:15 AM *Influence of Undercooling on the Graphite Pattern of Gray Iron*, by R. Schneidewind and C. D'Amico, University of Michigan, Ann Arbor, Mich.



J. T. MacKenzie



A. D. Lynch



V. J. Hydar

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W. G. Conner, Jr.



J. W. Bolton



G. P. Phillips



J. H. Hall



D. C. Zuege



H. H. Blossjo

9:00 AM Foreman and Apprentice Training (*Gibson, Della Robbia Room*).

Chairman: A. D. Lynch, J. I. Case Co., Racine, Wis.

Co-Chairman: V. J. Hydar, Milwaukee, Wis.

9:00 AM Foundry Apprentice Training—An Essential to Foreman Training, by A. R. Luebke, Fairbanks Morse & Co., Beloit, Wis.

10:00 AM A Foundryman's Approach to Foreman Training, by W. G. Conner, Jr., Walworth Co., Greensburg, Pa.

9:00 AM Steel (*Gibson, Parlors A-D*).

Chairman: J. W. Bolton, Lunkenheimer Co., Cincinnati, O.

Co-Chairman: W. C. Hartmann, Bethlehem Steel Co., Bethlehem, Pa.

9:00 AM High Alloy Steel Castings for Heat and Corrosion Resistance, by Jas. Corfield, Michigan Steel Castings Co., Detroit, Mich.

9:30 AM Report of Committee on Impact Tests.

9:45 AM Report of Committee on Radiography. Gamma-Ray Radiographic Standards of the U. S. Navy for Steel Castings, by N. A. Kahn, New York Navy Yard, New York City.

10:30 AM Copper as an Alloying Element in Some Cast Steels, by C. T. Greenidge and C. H. Lorig, Battelle Memorial Institute, Columbus, O.

9:00 AM Sand Research (*Gibson, Italian Room*).

Chairman: H. S. Washburn, Plainville Casting Co., Plainville, Conn.

Co-Chairman: W. G. Reichert, Singer Mfg. Co., Elizabeth, N. J.

9:00 AM Properties of Resin Bonded Cores, by Emile Pragoff, Jr., Hercules Powder Co., Wilmington, Del.

10:00 AM Hot Strength and Collapsibility of Foundry Sands, by H. W. Dietert, Harry W. Dietert Co., Detroit, Mich.

11:00 AM Annual Business Meeting and Board of Awards Lecture (*Gibson, Roof Garden*).

Chairman: President Marshall Post.

12:30 PM Steel Division Committee on Radiography (*Gibson, Parlor S*).

12:30 PM Apprentice Training Committee (*Gibson, Parlor R*).

12:30 PM Washington District Conference Committee (*Gibson, Parlor Q*).

2:00 PM Steel (*Gibson, Parlors A-D*).

Chairman: John Howe Hall, Philadelphia, Pa.

Co-Chairman: D. C. Zuege, Sivy Steel Casting Co., Milwaukee, Wis.

2:00 PM A Rapid Method for Determining Carbon in Plain Carbon Steels for Control Purposes, by H. H. Blossjo, Minneapolis Electric Steel Foundry, Minneapolis, Minn.

2:20 PM Synthetic Bonded Steel Molding Sands, by C. W. Briggs, Steel Founders' Society, Cleveland, and R. E. Morey, Naval Research Laboratory, Anacostia, D. C.

3:10 PM A Discussion on Steel Castings Having High Mechanical Properties, by George Delbart, Societe Francaise de Constructions Mecaniques, Paris, France. (Official Exchange Paper—Association Technique de Fonderie de France.)

3:30 PM Report of Committee on Heat Treatment.

3:40 PM Report of Committee on Coupon Tests.

2:00 PM Sand Research (*Gibson, Italian Room*).

Chairman: H. S. Washburn, Plainville Casting Co., Plainville, Conn.

Co-Chairman: W. G. Reichert, Singer Mfg. Co., Elizabeth, N. J.

2:00 PM Elements of Petrographic Study of Bonding Clays and of The Clay Substance of Molding Sands, by R. E. Grim, Illinois Geological Survey, Urbana, Ill.

2:40 PM Mineral Composition and Textures of the Clay Grade of Molding Sand, by C. E. Schubert, University of Illinois, and R. E. Grim, Illinois Geological Survey, Urbana, Ill.

3:20 PM Report of Sand Research Committee.

2:00 PM Foundry Costs (*Gibson, Della Robbia Room*).

Chairman: R. L. Lee, Liberty Foundry Co., Wauwatosa, Wis.

Molding Costs—Committee Report.

Melting Costs—Committee Report.



J. E. Goss



H. W. Dietert



W. G. Reichert



C. E. Schubert



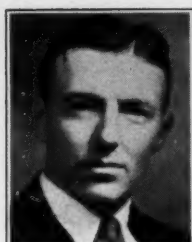
H. Ries



H. A. Deane



A. J. Herzig



A. L. Boegehold



L. H. Rudesill



A. H. Jameson



John Lowe



C. E. Sims

4:00 PM Lecture Course—Session 3 (*Gibson, Ball Room*).

Chairman: Horace Deane, Deere & Co., Moline, Ill.

The Microscope in Elementary Cast Iron Metallurgy, by R. M. Allen, Bloomfield, N. J.

7:00 PM A.F.A. Annual Dinner (*Gibson, Roof Garden*).

Presentation of Medal Awards.

Address.

Thursday, May 18

9:00 AM Gray Iron Shop Course—Session 4 (*Gibson, Roof Foyer*).

Chairman: J. A. Woody, American Cast Iron Pipe Co., Birmingham, Ala.

Cupola Operation, by John Lowe, Lansing, Mich.

10:00 AM Gray Iron (*Gibson, Ball Room*).

Chairman: A. L. Boegehold, General Motors Corp., Detroit, Mich.

Co-Chairman: L. H. Rudesill, Griffin Wheel Co., Chicago, Ill.

10:00 AM *Influence of Composition on Electric Furnace Irons*, by R. G. McElwee, Vanadium Corp. of America, Detroit, and R. Schneidewind, University of Michigan, Ann Arbor, Mich.

10:30 AM *Some Factors in Hardening and Tempering Gray Cast Iron*, by G. A. Timmons, V. A. Crosby and A. J. Herzig, Climax Molybdenum Co., Detroit, Mich.

11:15 AM *Effects of Heat Treatment on Combined Carbon and Physical Properties of Cast Iron*, by S. C. Massari, Association of Manufacturers of Chilled Car Wheels, Chicago, Ill.

9:30 AM Steel—Symposium on Melting Practices (*Gibson, Parlors A-D*).

Chairman: T. N. Armstrong, International Nickel Co., New York City.

Co-Chairman: John Howe Hall, Philadelphia, Pa.

Acid Electric, by W. G. Finster, Reading Steel Castings Div., American Chain & Cable Co., Reading, Pa.

Basic Electric, by C. W. Briggs, Steel Founders' Society, Cleveland, O.

Basic Open Hearth, by J. W. Porter, American Steel Foundries, East Chicago, Ind.

Acid Open Hearth, by W. C. Harris, Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.

Converter, by F. B. Skeates, Link-Belt Co., Chicago.

Induction Furnace, by G. F. Landgraf, Lebanon Steel Foundry, Lebanon, Pa.

10:00 AM Pattern Making (*Gibson, Della Robbia Room*).

Chairman: Vaughan Reid, City Pattern Works, Detroit, Mich.

Co-Chairman: H. M. Harrold, Caterpillar Tractor Co., Peoria, Ill.

Some Pattern Making Problems, by J. E. Kolb, Caterpillar Tractor Co., Peoria.

12:30 PM Gray Iron Round—Luncheon (*Gibson, Ball Room*).

12:30 PM Steel Division Round Table Meeting—Luncheon (*Gibson, Parlors N, O, P.*).

Chairman: A. H. Jameson, Malleable Iron Fittings Co., Branford, Conn.

Co-Chairman: T. N. Armstrong, International Nickel Co., New York City.

Deoxidizers

Discussion Leaders: C. E. Sims, Battelle Memorial Institute, Columbus, and A. P. Gagnebin, International Nickel Co., Bayonne, N. J.

Reduction of Silicon From Slag

Discussion Leaders: D. C. Zuege, Sivyer Steel Casting Co., Milwaukee, and H. H. Blosjo, Minneapolis Electric Steel Casting Co., Minneapolis, Minn.

2:00 PM *Special Plant Visitation Trip*

Hamilton Coke and Iron Division, American Rolling Mill Co., Hamilton, O. (Blast Furnaces and Coke Ovens)—Buffet Supper, Hamilton Country Club.



R. G. McElwee



G. A. Timmons



V. A. Crosby



C. W. Briggs



Vaughn Reid



J. A. Kolb

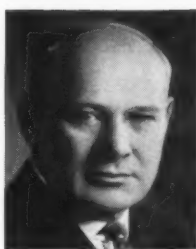
AMERICAN FOUNDRYMAN

Hygiene



The Employability of the Silicotic

By Voyta Wrabetz, Madison, Wis.



This is the first section of a paper, "The Employability of the Silicotic," as prepared for and presented before the 23rd annual meeting of the American Industrial Physicians and Surgeons, June 7, 1938. The author, Mr. Wrabetz, is chairman of the Industrial Commission of Wisconsin and chairman of the Wisconsin Labor Relations Board. He is noted as being one of the best informed persons in the United States on legislation pertaining to workmen's compensation and occupational diseases. This paper is reprinted here, as of particular interest to employees and employers of foundries. The remaining section of this paper will appear in the next issue of the American Foundryman.

THE recent review and appraisal of silicosis conducted by the Federal Department of Labor and studies of the same subject by various state legislatures and commissions, have focused renewed public attention upon the subject of occupational disease, particularly silicosis. Much has been done to clear the air concerning a subject into which confusion and almost an element of mystery have been injected. The problem of silicosis has not deserved the dilatory treatment and the rather fearful attitude which have been assumed by employers, insurance carriers and various legislative and administrative bodies.

A consideration of the problem of silicosis discloses the fact that the problem is not so much the determination of the method and amount of compensation payments, but rather the determination of the question of the employability of the silicotic. This latter determination depends on many elements. It embraces not only an historical study of the disease and its many concurrent and complicating diseases, but also involves consideration of the many necessary administrative problems which always arise. Involved are the subjects of engineering control, medical control and administrative control by governmental bodies themselves, whether they be courts or commissions empowered to award or deny compensatory relief.

The discussion of the subject as to its importance in industry in this country need take us back only a very few years. Even today, only a few states have seen fit to compensate for silicosis as an occupational disease and, in many others, common law rules practically exclude recovery for disabling silicosis in courts of law.

It is most unfortunate that a disease, so definitely and truly occupational as silicosis, became

important as an economic problem in this country during the depths of the depression with its widespread unemployment. At that time, engineers and medical men were still at sea, not only as to the harmful particle size, but also as to the dosage or concentration likely to cause pulmonary fibrosis.

A great flow of literature on this subject has poured forth during the last ten years. Some of it shows informed and well-considered study and research. Some is based on conjecture and fear. We still hear fishwives' tales about the causes and effects of this pathological condition. But we are learning to discriminate and beginning to see that there are certain rather well-defined and reliable principles that may be postulated, that can lead us out of the maze of ignorance and fear in which we have been wandering.

Medical men in all fields—internists, radiologists, heart specialists and pathologists—have now had a sufficient number of silicotics under their care and observation so that standards of diagnosis have become rather uniformly fixed. The time has come when administrative bodies, competent for their task, can justly administer occupational disease laws.

It is no wonder that the employability of workers already known to have had exposure to silica, or with a known silicotic fibrosis, even though slight, became a bugbear problem for employers having a possible silica hazard in their plants. Knowing that men with no abnormal physical signs and able to work, but with X-ray shadows and a history of silica exposure, were frequently awarded huge sums by juries, and even by administrative bodies or commissions, employers should not be too severely criticized for their defensive

employment practices involving silicotics, when we take into account the fact that they were faced with possible financial embarrassment or economic extinction because of this single problem.

The dark clouds are lifting and showing an enlightened horizon. The pioneering work of such outstanding engineers as Professor Drinker of Harvard, Donald Cummings and others, and such outstanding medical authorities as Dr. R. R. Sayers of the United States Public Health Service, Dr. L. U. Gardner and his staff at Saranac Lake, Dr. A. J. Lanza, medical director of the Metropolitan Life Insurance Company, together with the recent research work of Dr. Sander and Dr. Norbert Enzer of Milwaukee, and Dr. M. A. Seevers of the University of Wisconsin, is now recognized as scientifically accurate and, above all, as practical.

Wisconsin has, as most know, compensated all occupational diseases since 1919. It has done so under the same type of law and with use of the same kind of procedure as applies to the administration of compensation for accidental injuries. Since the inclusion of occupational disease, about 2½ per cent of all payments have gone for compensation and medical benefits for such diseases. Because of depression conditions, a much larger amount per year has been paid than will ever be paid in the future. This was because of the factors of so-called accrued liability and over-liberality in settlement and because of lack of knowledge and early hysteria on the part of employers, insurance carriers, doctors and the Industrial Commission. Had the true status as to the employability of silicotics been known earlier, the problem would have been even simpler than it has proved to be in Wisconsin.

Definition of Terms Necessary

In consideration of this subject, we must first of all define our terms. What do we mean by silicosis and what do we mean by employability?

If we will recognize that silicosis, in its various manifestations, ranges all the way from a fairly innocuous condition to a disease fraught with dire consequences, we shall learn that we must classify silicosis into grades, or degrees, not necessarily sharply defined or limited. We must recognize that different stages of the condition must be treated, medically and economically, in different ways—that some silicosis may well be practically disregarded from both aspects and that other manifestations must be treated with skillful discrimination and respect. We must learn that the study is not one which can be concluded briefly, or which is susceptible to a few simple rules, but that we must always rely upon the true medical scientists and the engineers who have been willing to give sufficient intelligent thought to the subject to reach accurate and practical conclusions. The subject is particularly one of medicine and engineering and, when legal aspects are involved, we must bear that in mind primarily. Laymen must not reach too definite opinions or conclusions on a few

hours or weeks of desultory reading of the various articles and books which have been written on the subject. Too much poorly digested material has been handed to us, it seems to me, sometimes with painful results.

When we consider the subject of the employability of the silicotic, we must examine the position of both employer and employee with great care. We must consider not alone the social, but the economic aspects which present themselves and we must do so with fairness and justice to both of the interested parties.

Need Education as to Cause and Nature

What is needed, more than anything else, is education as to the cause and nature of silicosis. Only recently an employer told me that he could not hire a man with silicosis because he did not believe it fair to other employees to hire a man with a communicable disease. Another employer actually believed that silicosis is a form of tuberculosis. So long as misapprehension of this sort exists, our problem of employability will not be solved.

We must all appreciate that silicosis is a slowly developing thing and that an employee may go through a lifetime of exposure to low dust concentrations without recognizable clinical symptoms. We must learn that although idiosyncrasy of the individual may play some part, it is an almost negligible factor and that the course of silicosis in the large run of cases is quite uniform and predictable. We must learn that high concentrations of deleterious dust with no protection to the worker are capable of causing comparatively rapid development, but that such development, even under bad conditions, is generally a matter of years and not of months. We must appreciate that with proper safeguards and efficient dust removing devices, the worker is almost as safe in a dusty trade as he is when walking on the streets. We are all exposed to the breathing of some siliceous dust, no matter what our environment may be.

Decrease of Exposure

If all silica hazards now existing could instantly be eradicated by the waving of a magic wand, our problem would be simple. Our objective must be to decrease the exposure to deleterious dust sufficiently so that even a working lifetime of exposure will not cause disabling damage. This objective is practical and obtainable and its cost, spread like the cost of machinery and equipment over years, should be not unduly burdensome. However, even though burdensome, it is still wholly necessary from a purely economic standpoint. Training of new men for skilled trades is expensive. It is cheaper for the employer to clean up and keep his men at work than to cast them aside and undergo the expense of turnover, training and those intangible results of unrest and antagonism which are created by a more or less wholesale dis-

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charge of workers who appear and usually are able to continue at their tasks.

While speaking of this objection, may I pause for a brief observation with respect to its consummation? Wisconsin has, or, more truly, had had, a silicosis hazard. We have iron, lead and zinc mines involving driving through siliceous rock, a large granite industry with its known silica exposures, many foundries, both large and small, ceramic plants and other factories and processes in which the use of silica is a factor. Because of both a social and an economic urge, our industries have performed almost a miracle by various means of removing dust, in reducing the amount of silica in the breathing zones of workers to relatively safe concentrations. The romantic story of these accomplishments might properly be entitled, "The Slaying of the Giant Silica," or some such heroic title. But that is another story and is mentioned here only because together with a consideration of what is to be done *now* with the silicotic, it is the other important factor in the ultimate solution of the entire silicosis problem. To date, all those who are interested and who know what must be done and what is being done, are happy in contemplation of the future. We congratulate those farsighted employers who are doing things and take just pride in their boast that while it is costing something to make places of employment safe, they can proudly exclaim, "We are not killing men."

Some Earlier Considerations on Employability

When cases of silicosis first came to the attention of the Industrial Commission of Wisconsin for decisions on compensation claims, it was the prevailing medical opinion that even the earliest recognizable lung changes caused a measurable impairment of lung function. At our commission hearings on such cases we were hearing figures of 10 to 25 per cent disability for first stage cases, 25 to 75 per cent disability for second stage cases, etc. In many instances, these figures were pure guesswork on the part of the examining physicians. In other cases they were computed from rough exercise tests, or vital capacity determinations which, it now is generally believed by physiologically-minded medical men are quite unreliable for this purpose because of the necessity of absolute cooperation on the part of the person being examined and for many other reasons too numerous to mention at this time. Our commission, however, as well as others, made many awards in those early days based on such partial disability estimates improperly arrived at.

As a result of this prevailing medical thought, employers began examining prospective employees before hiring. In order to "play safe," many, who lacked a farsighted point of view, began refusing employment to any persons whose X-ray films showed anything except perfectly clear lungs. Many doctors making such examinations were advising old employees to discontinue the only

trades they knew, although their X-ray films showed only slight deviations from the normal.

We have on record one employer who refused employment in his foundry to any person showing such negligible X-ray changes as small adhesions at the diaphragm, healed childhood infection scars, those that gave histories of bronchitis and pneumonia, as well as those who showed the slightest degrees of lung fibrosis. As a result of such rigid rules, he was forced to examine eight men for every one accepted for work. Since he hired over a hundred new men for his foundry in 1933, it can be seen what havoc was raised by the rejection of over seven hundred applicants for work. If all other foundry employers in Wisconsin had followed the same procedure that year, a serious situation undoubtedly would have resulted.

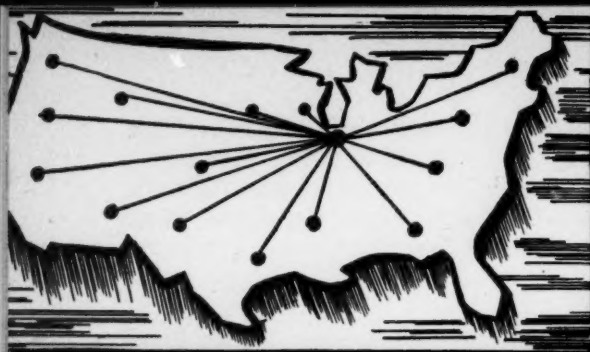
It was fortunate that the large majority had a much more sane viewpoint and had not instructed their doctors to do such unnecessary weeding out. Some rejected men found work elsewhere, but many others naturally filed claims for compensation. It is needless to add that 1933 and 1934 were our busiest years in adjusting silicosis claims, and that in those two years alone practically half of all claims that we have had through the years were adjusted. Over half of the claims which were filed during those two years were disallowed on the grounds that no disability had been proven. In perhaps one-third of the total cases in these two years, workers filed claims in the search of needed income—oftentimes not because their claims had real merit, but because they had been misinformed.

Education of All Necessary

We, on the commission, soon realized that a program of education was necessary, not only for ourselves, but for doctors as well who were interested in this problem. Their opinions expressed at hearings were at such wide variance that it was next to impossible to decide what was the true state of affairs between two extremes. Accordingly, we sponsored a symposium on silicosis, which was held here in Chicago in November, 1932. At that meeting, we invited six or seven recognized authorities on the subject to speak and we invited many physicians, industrialists and representatives of insurance companies to attend and participate.

In 1934 all the members of our commission, the director of our workmen's compensation division, and our engineer in charge of dusts and fumes control, as well as a representative of the Attorney General's Department, attended the first symposium on silicosis at Saranac Lake, New York, and heard the opinions of other authorities on the amount of silicosis necessary before the person affected developed disability. The subject is one which particularly calls for the services of the expert and the knowledge which we have acquired from the true scientists in this work has, I believe, done much to bring order out of chaos and, therefore, to eliminate unwarranted confusion.

(To Be Continued)



Chapter Activities

Phila. and N. Y.-N. J. Chapters Hold Successful First Joint Regional Meeting

By W. Phair*, New York, N. Y.

CLEAR weather and an unusually interesting program brought over 200 foundrymen to the first regional foundry conference held under the sponsorship of the Metropolitan Philadelphia and Metropolitan New York-New Jersey Chapters of A.F.A. and the Mechanical Engineering Department of Rutgers University. The meeting took place April 1 in the buildings on the campus of Rutgers at New Brunswick, New Jersey. This initial meeting was so successful that the chapters favored making the conference an annual event. The success was largely due to the efforts put forth by the Conference Committee consisting of representatives from the two chapters and the university. The personnel of this committee was as follows:

Conference Committee Chairman
Fred G. Seifing, International Nickel Co., New York City.

Representing Metropolitan New York-New Jersey Chapter
T. D. Parker, Climax Molybdenum Co., New York City.

*Associate Editor, THE IRON AGE.

Sam Tour, Lucius Pitkin, Inc., New York City.
W. A. Phair, *The Iron Age*, New York City.

Representing the Metropolitan Philadelphia Chapter

H. L. Henszey, Chapter Chairman, Carborundum Co., Philadelphia, Pa.
W. B. Coleman, Chapter Secretary, W. B. Coleman Co., Philadelphia, Pa.
John Howe Hall, Philadelphia, Pa.

Representing Rutgers University

Prof. W. C. Schulte, Mechanical Engineering Department.

At the opening session of the conference, P. H. Dagget, Dean of Engineering at Rutgers welcomed the foundrymen and in a talk stressed the need for closer cooperation between industry and technical schools.

With John Howe Hall presiding the first technical session was devoted to discussions of castings from the consumer and producer viewpoint. Norman L. Mochel, metallurgist, Westinghouse Electric and Manufacturing Co., Philadelphia, spoke for the engineering consumer, while J. C. Pendleton, foundry superintendent, Newport News Ship-

building and Dry Dock Co., Newport News, Va., gave the presentation from the producer's viewpoint.

Mr. Mochel declared that both producer and buyer must realize that the other must make a profit and then analyze their mutual problems in advance and keep in close touch during the production of the order. The buyer's primary interest, he said, is in his final product and its integrity, and hence, he should always be interested in new foundry practices. It is also up to the foundrymen, Mr. Mochel stressed, to be equally alert to new developments in order to guide their own practice to the best advantage. With the aid of lantern slides Mr. Mochel discussed work in his own shop.

Mr. Pendleton in his talk on castings from the producer's viewpoint said that he felt that the use of fabricated construction is growing at the expense of castings. This trend, in his opinion, is the foundry industry's number one problem. Still closer study of design in cooperation with the consumer, the practice of visiting other shops frequently, as well as attending technical meetings, for the exchange of ideas, were valuable means of solving this problem, he said.



Rutgers Conference Dinner
(Left to right) D. J. Reese, E. C. Barringer, President Post, Prof. M. A. Bailey, Sam Tour, Prof. W. C. Schulte.

Photographs of Rutgers Conference furnished through courtesy of W. B. Coleman, Secretary Philadelphia Chapter.

Using slides, Mr. Pendleton described various operations in his own plant, referring particularly to marine castings and pressure work. For the latter he prescribed the use of virgin metal at all times.

After an informal luncheon in the spacious gymnasium at Rutgers, the technical sessions were resumed at two o'clock under the chairmanship of Sam Tour. The first paper was—"Casting Defects as Affected by Sands," read by W. G. Reichert, metallurgist, Singer Manufacturing Co., Elizabeth, N. J. Dealing specifically with defects caused by sand, Mr. Reichert said that the first consideration should be to select a sand with suitable grain structure and then use this as a base for the variables, such as permeability, strength and the fines which accumulate in the heap. By close control of moisture, a relatively coarse sand with a high permeability can be made to produce as good, or better surface than a finer grade of sand with either a low or high moisture content. He also claimed that in order to produce low losses and low cleaning costs it was necessary to produce a fair distribution of bond around the individual sand grains.

Mr. Reichert also pointed out that with the best type of sand for any given class of work, it would produce poor results unless the gating design and the position of the runners were correct. "It is generally necessary," he said, "to either standardize in the molding sand properties and vary the gating arrangements or standardize in the gating arrangement and vary the molding sand properties."

The concluding paper—"Casting Effects as Affected by Gates and Risers," was presented by the chairman of the Central New York A.F.A. Chapter, H. H. Judson, foundry superintendent, Goulds Pumps, Inc., Seneca Falls, N. Y. When a job first enters his plant, Mr. Judson said, he first runs a series of sample castings, breaks them open for study and then provides temporary gates, which, if satisfactory, are adopted. He said that a gating system

should be so designed that a metal can be made to flow quietly without turbulence. He also emphasized that if risers are necessary, it is advisable to gate into or near the riser, in order to provide it with hot metal. In producing pressure work, Mr. Judson said he prefers several small gates to one large gate of the same capacity.

The conference dinner was held at the Roger Smith Hotel with Fred G. Sefing, conference committee chairman, presiding. Mr. Sefing first introduced as toastmaster the president of the American Foundrymen's Association, Marshall Post, Birdsboro Steel Foundry and Machine

were thought impossible. President Post presented interesting statistics showing that there are 5,800 foundries in the country, employing 360,000 men and producing about 10,000,000 tons of castings a year.

President Post then introduced Prof. M. A. Bailey of Rutgers, who expressed the university's pleasure of being able to act as host to the foundrymen and hoped that they might have a similar opportunity in the future. He also stressed the need for close cooperation between the nation's technical schools and industry in an effort to solve some of the many problems confronting industry today.



CONFERENCE SPEAKERS AND LEADERS

(Upper left) D. J. Reese, Chairman New York-New Jersey Chapter; Dr. G. H. Clamer; Past President A.F.A., H. L. Henszey; (upper right) W. G. Reichert; (lower) J. C. Pendleton, H. H. Judson, N. L. Mochel.

Co., Birdsboro, Pa. President Post paid tribute to Rutgers and similar institutions for their assistance in solving some of industry's problems. He stressed the need for closer cooperation with the nation's technical schools in order to secure the full benefits of their laboratories and research facilities. He described to his listeners the A.F.A.'s position in the "new scheme" of things and listed its many contributions to the founding industry. He also predicted future prosperity for the industry and pointed out that industry is doing things with cast iron today that a short time ago

The principal address was presented by Edwin C. Barringer, executive secretary of the Institute of Scrap Iron and Steel. Mr. Barringer said unfair implications have been read into the purchase of American pig iron, scrap, finished steel and rolling mill equipment by foreign nations. "The assumption that these metals are entirely for war purposes is erroneous, because abroad, as at home, iron and steel, including castings, are inherently metals of peace and vehicles of a high standard of living."

He pointed out that the entire tonnage for the present Amer-

ican naval expansion program, which will take three and a half years to complete, could be rolled at the Gary, Ind., plant of Carnegie-Illinois Steel Corp. in a little more than one turn, if all plant facilities were concentrated on such an order. He contended that armaments in themselves, citing various examples, took a surprisingly small steel tonnage.

Discussing trends in scrap, he said the broadening range in alloy steels accentuates the scrap segregation problem, and the time is approaching when this will demand consideration by both seller and consumer. Due to increasing trend toward light consumer goods, potential scrap supply for foundries is diminishing, though he did not imply a marked shortage is imminent.

Detroit Chapter-Michigan State Hold Seventh Joint Conference

CASTIBILITY was the subject at the Seventh Annual Foundry Conference sponsored jointly by the Detroit Chapter of A.F.A. and Michigan State College in Olds Engineering Building, East Lansing, Mich., April 14 and 15. While the attendance was not as large as last year, the interest displayed in the subjects discussed more than made up for the deficiency.

Friday, April 14, was devoted to discussions concerning external influences on castability and covered such subjects as superheating, controlled directional solidification, sand characteristics, etc. During the sessions, it was brought out that there are many conceptions of the word "castability." These differences of opinion made the discussions and presentations the more interesting.

The Friday morning session was presided over by F. J. Walls, International Nickel Co., Inc., Detroit, and consisted of two papers, the first by N. A. Ziegler and H. W. Northrup, Crane Co., Chicago, presented by the latter, which dealt with the "Effect of Superheat on Castability and Physical Properties of Gray Iron." It was interesting to note that much of the author's data confirmed findings of an investigation on the same subject conducted at Michigan State College and presented at a similar conference a few years ago. The second paper was presented by F. A. Melmoth, Detroit Steel Castings Co., Detroit, Mich., on

"Methods of Controlling Directional Solidification of Metals." Mr. Melmoth outlined some of the methods of mold reversal advocated by the late George Batty which he said were being used in many steel foundries today with excellent results.

The afternoon session was presided over by J. D. Stoddard, Detroit Testing Laboratories, Detroit. H. L. Womochel, Michigan State College, presented a paper on "The Relation of Sand Characteristics to the Shrinkage and Cooling Rates of Gray Iron Castings," under the authorship of himself and C. C. Sigerfoos, also of the college. W. E. Sicha, Aluminum Co. of America, Cleveland, gave an excellent discussion on the effect of sand characteristics, alloying additions and melted practices on the castability of aluminum alloys. Both papers were discussed at length and many interesting points were brought out. Following an intermission, H. W. Dietert, Harry W. Dietert Co., Detroit, discussed the effect of sand characteristics on such properties as chill, strength, fluidity and shrinkage characteristics of gray iron. This paper pointed out that a proper correlation of variables is necessary to secure good castings.

With Pat Dwyer, engineering editor, *The Foundry*, Cleveland, presiding as toastmaster, the annual dinner was held in the Union building of the college. Special Agent Acres, Detroit office, Federal Bureau of Investi-

gation, gave a very interesting talk on "Science and Criminal Justice." Prior to the talk, members of the dramatic class presented a short comedy.

Saturday morning, April 15, sessions were resumed and members and guests reconvened in Olds Hall to discuss the effect of internal reactions on castability. V. A. Crosby, Climax Molybdenum Co., Detroit, acted as discussion leader, and W. H. Spencer, Sealed Power Co., Muskegon, Mich., reviewed the factors which influence the fluidity of metals. John Lowe, Lansing, Mich., then discussed the effect of various raw materials used in cupola operation on the castability of gray iron.

Following a short intermission, the session resumed with a short symposium on the effects of alloying elements on the castability of various metals. H. C. Aufderhaar, Electro Metallurgical Co., Chicago, spoke of the effects on low, medium and high concentrations of various alloys. He pointed out that as the use of alloys was relatively young, not a great deal of information was available. "Castability of Alloy Steel Castings" was the subject of a paper presented by R. J. Wilcox, Michigan Steel Casting Co., Detroit. By means of a special test, he illustrated the castability of various alloys steels.

The final paper on the program was presented by R. G. McElwee, Vanadium Corp. of America, Detroit, who covered "Ladle Treatments by Graphitizers and Deoxidizers." Mr. McElwee showed that by balancing certain groups of elements properly, that it was possible to control deoxidation and graphitization results to a marked degree.

Saturday afternoon was devoted to demonstrations of crystallization, stress concentrations by means of polarized light, and foundry operations in the Michigan State College foundry. The general expression by those present that this conference was the most interesting they had ever attended, attests for the interest of the Seventh Annual Foundry Conference held at Michigan State College.

AMERICAN FOUNDRYMAN

Bob Watson Addresses Central New York Chapter

By L. D. Wright*, Geneva, N. Y.

THE REGULAR monthly meeting of the Central New York Chapter was held April 14 at the Onondaga Hotel, Syracuse, with 100 members and guests in attendance. Following the dinner, Chapter Chairman H. H. Judson, Goulds Pumps, Inc., Seneca Falls, announced the appointment of a committee to develop plans for a September picnic, the committee to consist of its chairman, J. L. Lonergan, Morris Machine Works; L. E. Hall, Syracuse Chilled Plow Co. and J. J. Jardine, Caldwell & Ward Brass Foundry. He also announced the appointment of a nominating committee to present a slate of officers to be voted upon at the May 26 chapter meeting.

Following these announcements Mr. Judson introduced as the speaker of the evening "Bob" Watson, M. A. Hanna Furnace Co., who took as his subject—"Coke and Modern Cupola Practice." He first gave a review of the development in pig iron production in the last thirty years which was found extremely interesting. Mr. Watson then went on to say that in the later years the metallurgists and foundrymen began working on carbon structure, analyzing for combined carbon and graphitic carbon. The speaker stated that no furnace can guarantee the total carbon in any iron. It is Mr. Watson's belief that good castings are generally produced where the carbons are divided in the proportion of 1/6 combined carbon to 5/6 graphitic carbon. It has been his experience that this holds true throughout the foundry industry. The speaker also believes that we do not have carbon pick-up in the cupola from direct contact with the coke but that the carbon comes from the gases evolved, especially the monoxide gas.

Mr. Watson discussed at length the use of sized coke in the cupola and stated that it was his opinion that, where sized coke was used, it was also necessary to size the stock charged. He warned the foundrymen to beware of cokes containing fractures as coke of this type, when placed in a cupola, would break up under the burden im-

posed upon it by the weight of the iron and would result in the loss of blast penetration. Several examples were described where this had taken place and the foundrymen obtained blue holes in the castings, which was the result of iron monoxide.

The speaker closed by explaining that the quality of the iron obtained at the spout is related to the method of charging the cupola. After the conclusion of Mr. Watson's talk, a great many questions were asked from the floor and a lively discussion ensued.

President Post Visits Buffalo Chapter

By J. R. Wark*, Buffalo, N. Y.

THE Buffalo Chapter, at its April 3 meeting, had as its guest speaker the president of the Association, Marshall Post, Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa. One of the largest chapter attendances was present at the Hotel Tournaine when chapter chairman M. W. Pohlman called the meeting to order after the dinner. During the dinner the Chapter was entertained with songs by four colored molders, employees of Bingham and Taylor Foundry. This musical program was exceptional.

R. K. Glass, chapter treasurer, introduced W. H. Woodall, who told of the "Scoutorama" to be

*Queen City Sand & Supply Co., and Secretary, Buffalo Chapter.

held during the month, one feature of which is to be a foundry booth sponsored by Boy Scouts who earned merit badges in "Foundry." Members volunteered to aid—John McCallum for non-ferrous group, Lynn Reynolds for gray iron, Jas. P. Begley for steel and J. R. Turner for sand.

Chairman Pohlman then introduced President Post, who spoke on "Castings by the Randupson Process." He illustrated his talk with slides and moving pictures, showing the highlights of the cement molding process. Those present all agreed that the meeting was their best. Gratification was expressed at the increasing number of foundrymen at each succeeding meeting.

Gates and Risers at Southern California Meeting

By M. S. Robb*, Los Angeles, California

THE regular monthly meeting of the Southern California Chapter was held March 23 at the Clark Hotel, Los Angeles, with chapter chairman J. G. Coffman, Los Angeles Steel Casting Co., presiding. Following the dinner, which was attended by 84 members and guests, Chairman Coffman an-

nounced the program of the annual joint meeting with the Northern California Chapter to be held April 22 at Fresno. After a short musical program, the chapter was shown a splendid sound picture, "Wheels Across Africa." A main feature of the technical program was the reading by James Wilkins, Mechanical Foundries, of the Cincinnati convention paper by

*Supt., Geneva Plant, United States Radiator Co., and Secretary, Central New York Chapter.

*Bethlehem Steel Co., and Secretary, Southern California Chapter.

M. A. Scott, Greenlee Foundry Co., Chicago. This paper expounds the theory that by pouring through a gate into a riser and then directly into the casting, the sand between the riser and casting, becoming heated, causes the riser to remain liquid longer than the casting and by this means functions effectively in eliminating shrinkage. Following this theory Mr. Scott's foundry has been able to cut down on casting losses and greatly reduce the amount of metal in the risers. Mr. Wilkins, because of his experience as superintendent of a large eastern foundry, was able to present an

excellent discussion of the paper. A very interesting general discussion followed with the opinion divided on the success of such methods being followed on different types of iron.

E. C. Hummel, general manager, Utility Trailer Manufacturing Co., Foundry Division, then gave a talk on manufacturing of steel castings. He showed special pictures of steel castings illustrating what can be done to great advantage by the use of electric welding of castings. The pictures were furnished by the Steel Founders' Society of America.

St. Louis Chapter Hears Dr. Kinzel

By J. W. Kelin*, St. Louis, Mo.

APPROXIMATELY 100 members and guests attended the April 13 meeting of the St. Louis District Chapter held at the York Hotel. Following the customary dinner session, a coffee talk was given by J. Roy Stockton, sports writer for the St. Louis Post-Dispatch. Mr. Stockton outlined in a most entertaining manner various inside stories on ball players. After a brief intermission the business session was opened by Acting Chairman L. E. Everett, Key Company. The routine business including secretary-treasurer's report and other items were promptly disposed of, and then Webb Kammerer directed special attention to the April 21st meeting to be held in Kansas City. Chairman of the entertainment committee, R. K. Durkan, announced that the spring picnic would be held June 10 at Joe Davies' Country Club and that a wide variety of entertainment would be offered.

Thomas Ross spoke for the Apprentice Training Committee and directed attention to the competition in molding and pattern making for entries to be sent to the Cincinnati convention apprentice contest. R. Stifel, chairman of the Membership

Committee, announced new members. Following this report L. Desparois again directed attention to the fall conference to be held in St. Louis during the month of October. A proposed constitutional amendment increasing the Chapter Board of Directors to nine from six was given a first reading. Following this a Nominating Committee

"Human Engineering" Engages Interest of Chicago Chapter

By L. L. Henkel*, Chicago, Ill.

THE April 10 meeting of the Chicago Chapter held at the Medinah Club was a decided success, with 100 in attendance, despite the adverse weather conditions. Following the dinner, Chapter Chairman L. H. Rudesill, Griffin Wheel Co., introduced representatives of the Norton Co. who presented a short color movie film illustrating the manufacture of abrasive materials.

Reports were presented by A. W. Gregg, chairman of the Junior Foundrymen of America Committee and J. D. Burlie, chairman of the Lecture Course Committee. Chairman Rudesill

Chapter Badges at Convention

With the development of chapters and the increasing number of members identified with chapters attending the annual convention, provision is being made to have these members provided with chapter badges at the Cincinnati convention. On registering at the Hotel Gibson headquarters, each chapter member will be supplied with the regular badge with a ribbon attached giving the chapter name. Urge membership on non-member guests from your district.

was appointed—this committee instructed to submit its list of nominees for chapter officers during the year 1939-1940.

The speaker of the evening was then introduced. Dr. A. B. Kinzel, chief metallurgist, Union Carbide and Carbon Research Laboratories, New York, presented a most interesting talk on alloys in iron and steel. Following the presentation of this talk a keen interest was manifested in an extended round table discussion on the subject given.

nating committee, presenting then read the report of the nominees for consideration at the election to be held at the annual business meeting. Those nominated were:

Chairman—C. E. Westover, Burnside Steel Foundry Co.

Vice-Chairman—G. P. Phillips, International Harvester Co.

Treasurer—C. C. Kavin, Chas. C. Kavin Co.

Secretary—L. L. Henkel, Interlake Iron Corp.

Director to Serve Two Years—H. Kenneth Briggs, Western Foundry Co.

Directors to Serve Three Years—B. J. Aamodt, National Malleable & Steel Casting Co.

L. F. Lottier, People Gas, Light & Coke Co.

J. H. Abbott, Hickman, Williams & Co.

L. H. Rudesill, Griffin Wheel Co.

AMERICAN FOUNDRYMAN

*Federated Metals Div., A. S. & R. Co., and Secretary-Treasurer, St. Louis District Chapter.

*Interlake Iron Corp. and Secretary, Chicago Chapter.

The main speaker of the evening, Prof. Russell J. Greenly, Chairman, Department of Trades and Industries, Purdue University, was then introduced. Prof. Greenly spoke on "Human Engineering" and described the state of affairs in industry today because of lack of understanding of the human element. He stated that many companies em-

ploy a man for 20 years and then find the worker isn't capable of doing his job. When such a condition exists it is the fault of the management for allowing a man to go so long without either removing him or placing him in another department. In closing Prof. Greenly stated that seniority rights should not be placed above capability.

metallurgist, H. Kramer and Co., Chicago. His topic was "Non-Ferrous Foundry Practice." The field of metallurgy at the present time was compared to the past. He stressed the many varied lines that had to be considered in the metal industry in current practice. Mr. Thieme then discussed the effect of gases on metals of brass and aluminum and their alloys. Melting practices and pouring temperatures were given extensive consideration as of greatest importance in securing good castings. Many alloys were discussed as to their properties and applications for various types of castings. Mr. Thieme's talk brought an extensive and interesting discussion.

Quad City Chapter Listens to Carl Thieme

By J. Morgan Johnson*, Moline, Ill.

M. J. GREGORY, factory manager, foundry division, Caterpillar Tractor Co., Peoria, as chairman of the Quad City Chapter presided at the regular monthly meeting of the chapter held April 17 at the LeClaire Hotel, Moline, Ill. Following the chapter dinner, Carl Gamble, manager, John Deere Spreader Works, gave an interesting coffee talk on "Astronomy." Chairman Gregory then announced the appointment of a committee to plan the annual outing on June 17, with John H. Ploehn as chairman. The committee for the annual fall regional meeting to be held October 13 and 14 was named with P. T. Bancroft as chairman. The report of the nominating committee was made by its chairman, F. W. Kirby, presenting the following nominations for officers and board members for next year:

For Chairman—Horace Deane, Deere and Co.

For Vice Chairman—Herman Alex, Rock Island Arsenal.

For Secretary-Treasurer—J. Morgan Johnson, Tri-City Manufacturers Association.

For Directors: M. J. Gregory, P. T. Bancroft, L. W. Starner, Nathan Lesser, L. E. Roby, E. C. Wussow, Ray Wendland, Frank W. Wells and Earl Snoddy.

M. J. Gregory was also nominated to serve a three-year term on the Board of Trustees.

It was announced that the next meeting would be held May 26 at the Fort Armstrong Hotel, Rock Island, with M. D. Johnson of the Caterpillar Tractor Co.,

speaking on "Machine Shop Inspection of Castings."

The main speaker of the evening was Carl O. Thieme, chief

Seven Hundred Attend Wisconsin Meeting to Hear Senator Burke

OVER seven hundred foundrymen and guests were present at the Schroeder Hotel, Milwaukee, April 21, to hear United States Senator E. H. Burke, Nebraska, address a dinner gathering of the Wisconsin Chapter. Cooperating with the chapter in the banquet were the Industrial Association of Wisconsin and the Employers' Association of Milwaukee. Roy M. Jacobs, president of the Wisconsin A.F.A. Chapter, presided, with Atty. William J. Zimmer acting as toastmaster.

Senator Burke in his address, which was entitled "We Must Amend the Wagner Act," outlined major points in an amendment he has before the Senate.

Some of the major points he mentioned are a ban on the closed shop; abolition of the present national labor board; substitution of a three-man board representing employers, employees and the general public; prohibition of the check-off system; protection of employers against jurisdictional disputes between unions, and a requirement that a majority of employees in a bargaining unit must vote secretly for a strike before such a strike is called.

Some of these amendments, he believed, are likely to be passed by the present congress, provided it remains in session during part or all of the summer. Regarding his proposed "absolute

Part of the 700 Who Attended Dinner of the Wisconsin Chapter to Hear Senator Burke



*Tri-City Manufacturers Association and Secretary, Quad City Chapter.

prohibition" against the closed shop, he said:

"This is one of the most important features in my amendments, and I think ultimately it will be accepted by congress. But at present the opposition to this proposal is such that I think it is one of the least likely to be passed in the immediate future."

He declared: "One reason why the senate committee finally decided hearings should be held was that all polls of public opin-

ion have shown that not less than 75 per cent of the people are convinced the act should be changed." One of the amendments which he discussed would permit employers to discuss labor relations with their employees. He declared: "Such an amendment would return free speech to this country. At present an employer cannot tell the truth to his employees even upon request."

Northeastern Ohio Holds Annual Alloys Night

By Edwin Bremer*, Cleveland, Ohio

NEARLY 150 members and guests attended the annual "Alloys Night" meeting of the Northeastern Ohio Chapter which was held at the Cleveland Athletic club, Cleveland, on April 13. Chairman L. P. Robinson presided and immediately following the dinner called upon Bertram G. Parker, Youngstown Foundry & Machine Co., Youngstown, Ohio, and chairman of the nominating committee, for a report of his committee. Mr. Parker announced that the following nominations had been made:

For chairman—Ernest F. Hess, Ohio Injector Co., Wadsworth, Ohio; for vice chairman—F. Ray Fleig, Smith Facing & Supply Co., Cleveland; for secretary—J. H. Tressler, Hickman, Williams & Co., Cleveland, and for treasurer—R. F. Lincoln, Osborn Mfg. Co., Cleveland. For directors for three years—L. P. Robinson, Werner G. Smith Co., Cleveland; Fred A. Stewart, National Malleable & Steel Casting Co., Cleveland, and E. J. Hedlund, Urick Foundry Co., Erie, Pa. For director for one year—Frank L. Barton, Fulton Foundry & Machine Co., Cleveland.

At the technical session which followed four speakers present-

ed brief and pertinent facts on the use and application of chromium, molybdenum, nickel and vanadium. The speakers included R. C. Good, Electro Metallurgical Co., Pittsburgh; J. F. Robb, Climax Molybdenum Co., Pittsburgh; F. J. Walls, International Nickel Co., Detroit, and R. G. McElwee, Vanadium Corp. of America, Detroit. All speakers stressed the point that alloying agents must be used with intelligence since they are not panaceas. For the best results with alloys from the viewpoint of favorable effects and economy, suitable base mixtures must be selected. The speakers also pointed out that alloys sometimes performed two functions, and the molten iron must be in the proper condition to obtain the desired effect. For example, chromium and vanadium will act as deoxidizers in addition to their effect on carbon and iron which means that improper melting will give results which are not concordant.

*Metallurgical Editor, THE FOUNDRY.

Philadelphia Chapter Has Busy Week

FOR the regular monthly meeting held Monday, April 17, Philadelphia Chapter had a joint meeting with the American Welding Society. The speaker was Dr. C. W. Briggs, technical advisor to the Steel Founders'

Society of America, and his subject was "Welding Steel Castings and Weld Construction." The coffee talk was given by A. B. Leckie, special agent of the Federal Bureau of Investigation, and his subject was

"Crime and the Business Man." Approximately 100 attended the dinner meeting with quite a number coming in later to hear Dr. Briggs' talk.

On Friday evening, April 21, the Chapter had a special "President's Night" meeting in honor of national president Mr. Marshall Post. Other guests present were vice president Henry Washburn, executive vice president C. E. Hoyt and national directors L. N. Shannon, T. V. Kaveny and director-elect O. A. Pfaff. Other guests were D. J. Reese, chairman, and Sam Tour, director, of the Metropolitan New York-New Jersey Chapter. Over 240 were in attendance.

On calling the meeting to order, chairman Harold Henszey introduced A.F.A. past president Dr. Guiliam Clamer as toastmaster, who called on President Post, who addressed the meeting. Following President Post, executive vice president Hoyt spoke briefly. The meeting was then turned over to Lee W. Harris of the program committee, who introduced the speaker of the evening, Dr. Michael M. Dorizas of the University of Pennsylvania, a noted traveler and lecturer, whose subject was "The European Situation." Dr. Dorizas' very interesting talk was illustrated by charts, slides and movies taken by him in various European countries.

Early Iron Making In Alabama

By W. O. McMahon,*
Birmingham, Ala.

ON Friday night, March 17, a large group of foundrymen and their friends met at the Hotel Tutwiler, Birmingham, at 6:30 for a Birmingham Chapter dinner and to listen to a most interesting talk, illustrated with slides, on the "Early History of Iron Making in Alabama" by Henry J. Noble, one of our own members and works manager, American Cast Iron Pipe Co. Mr. Noble went into great detail re-

(Continued on Page 23)

*Chief Foundry Metallurgist, Sloss-Sheffield Steel & Iron Co., and Secretary-Treasurer, Birmingham Chapter.

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New Members



Company Members

- The Campbell-Hausfeld Co., Harrison, Ohio, (C. E. Haddock, President).
 The Duriron Co., Inc., Dayton, Ohio, (Robt. C. Schenck, Secretary).
 E. F. Houghton & Co. of Canada, Limited, Toronto, Canada, (E. H. MacInnis, Director of Sales).
 Novelty Foundry & Iron Works, Inc., Sterling, Ill., (Z. M. Mullen, Production Manager).
 Pacific Ball Mfg. Co., Huntington Park, Calif. (George M. Leach, Partner).

Personal Members

- H. E. Alex, Foundry Supt., Rock Island Arsenal, Rock Island, Ill.
 Richard A. Bertram, Salesman, Miller & Co., St. Louis, Mo.
 Gilbert Bohn, Foundry Trouble Shooter, Cincinnati Milling Machine Co., Cincinnati, Ohio.
 Catherine F. Bryant, Manager, Geo. W. Bryant Co., McConnellsville, N. Y.
 Stanley Bullard, Asst. Foundry Supt., The Bullard Co., Bridgeport, Conn.
 Harry Cullen, Carnegie-Illinois Steel Corp., Chicago, Ill.
 Wm. Fitzsimmons, Supervisor, International Harvester Co., Rock Island, Ill.
 C. H. Fredricks, Metallurgist, Cincinnati Milling Machine Co., Cincinnati, Ohio.
 Wm. C. Glover, Molder, The Hill Clutch Machine & Foundry Co., Cleveland, Ohio.
 L. A. Gosiger, Secretary, The S. Obermayer Co., Cincinnati, Ohio.
 Lansing B. Hardtla, Manager, Air Appliance Division, U. S. Hoffman Machinery Corp., New York, N. Y.
 Samuel T. Harleman, Development Engineer, Titanium Alloy Mfg. Co., Bethlehem, Penna.

- J. T. Hickman, Foreman, Cadillac Motor Car Co., Detroit, Mich.
 Lee H. Horneyer, District Manager, Cleveland Pneumatic Tool Co., St. Louis, Mo.
 Earl C. Kirk, Fdry. Coke Service Engineer, Wheeling Steel Corp., Portsmouth, Ohio.
 Gerald O. Loach, Metallurgist, Canadian Westinghouse Co., Ltd., Hamilton, Ont., Canada.
 Walter Polak, Asst. Foreman, International Harvester Co., McCormick Works, Chicago, Ill.
 Martin E. Rollman, Foundry Engineer, Cincinnati Milling Machine Co., Cincinnati, Ohio.
 Fred N. Rundquist, Chemist, Beloit Iron Works, Beloit, Wis.
 A. K. Sanderson, Vice President and Manager, Love Brothers, Inc., Aurora, Ill.
 Morten Solberg, Molder, The Hill Clutch Machine & Foundry Co., Cleveland, Ohio.
 Howard F. Taylor, Metallurgist, Naval Research Lab., Anacostia Station, Washington, D. C.
 Earl A. Tibbitts, Molder, Los Angeles Steel Casting Co., Los Angeles, Calif.
 H. A. Van Hala, Mfg. Agt., The Bristol Co., Birmingham, Ala.
 J. P. Whalen, Metallurgist, Dist. Lab., American Steel & Wire Co., Cleveland, Ohio.
 Howard Wiley, Supervisor, International Harvester Co., Rock Island, Ill.
 Philip P. Willenbacher, Jr., Core Maker, The Atlantic Foundry Co., Akron, Ohio.
 George Wisolek, Foundry Foreman, C. G. Conn, Ltd., Elkhart, Ind.

Foreign Members

- H. M. George, General Plant Manager, Ideal Boilers & Radiators, Ltd., Hull, E. Yorks, England.
 F. S. Perry, Perry Engineering Co., Ltd., Railway Terrace, Mile End, South Australia.
 Surahammar Bruks Aktiebolag, Surahammar, Sweden.

Early Iron Making In Alabama

garding the history of early furnaces in the state, emphasizing the fact that most of the pioneers were located near their ore supply (which was brown ore in most cases) and used the wood in the surrounding forest to make charcoal for fuel. These furnaces also were located at, or

near to, a source of water to generate power for same.

His talk dealt with the furnaces up until about the time of the war between the states and ended with a brief description of the first furnace in the state to use coke as a fuel. Mr. Noble brought out the fact that most

of the iron produced in the state prior to the war between the states was made in what he called five iron making counties: Calhoun, Cherokee, Talladega, Shelby and Etowah. Up to this time the Birmingham district proper had never produced any iron.



Abstracts

Note: The following references to articles dealing with the many phases of the foundry industry, have been prepared by the staff of *American Foundryman*, from current technical and trade publications.

When copies of the complete articles are desired, the Association will be pleased to furnish the address of the publication, or photostat copies may be obtained by ordering through Engineering Societies Library, 29 W. 39th Street, New York, N. Y.

Abrasives

APPLICATION. "*Abrasives and Their Application in Foundry Practice*," H. Bromage, *Foundry Trade Journal*, vol. 60, No. 1178, March 16, 1938, pp. 227-229. A report of a Lecture given to the Lancashire Branch of the Institute of British Foundrymen. The high-lights of abrasives are explained. Silicon Carbide, Bonding Method, Mounting Grinding Wheels, Foundry Application, Types of Machines Available, Surface Grinding, Cutting Off Machines and Relative Casts are described in detail. The discussion following this paper is included. Some of the points included in the discussion are, Elimination of Hand-Sawing, Balancing Problems, Testing Conditions, Bursting of Wheels, etc. (A.)

Analysis

SPECTROGRAPHIC. "*Spectrographic Analysis*," F. Twyman, *The Metal Industry* (London), vol. 54, no. 10, March 10, 1939, pp. 299-302. This article is a slightly abridged form of a paper read at the Institute of Metals annual meeting. The author discussed the application of spectrographic analysis in the non-ferrous metallurgical industry. Principles of procedure, homologous line pairs, means of producing radiation, means of increasing sensitiveness, means of determining intensities of lines, avoidance of effect of heterogeneity, preparation of electrodes, application of quantitative analysis and detection of non-metallic substances are the subjects detailed. A reference list is also included. (N.F.)

Cast Iron

DEFECT. "*The 'White Deposit' Defect in Large Iron Castings*," A. Le Thomas, *Foundry Trade Journal*, vol. 60, no. 1178, March 16, 1939, p. 238. Translated from the Bulletin of the Association Technique de Fonderie. The defect to be dealt with relates to relatively large masses of ordinary cast iron. On stripping, the casting appeared to be normal. The casting being true to shape. With the first blow of the fettling hammer, however, a white crust

several millimeters thick detached itself. The characteristics, how the defect arises and the remedy are described in detail. Two drawings are included illustrating where the defect occurred in commercial castings. (C.I.)

FOUNDRIE. "*Foundry Iron*," J. P. Dovel, *Steel*, vol. 104, no. 16, April 17, 1939, p. 48. Relative advantage of southern ores are discussed from the standpoint of their suitability for use in the gray iron foundry. Need for mixing ladles or some means to assure uniformity of cast is pointed out. (C.I.)

MOLYBDENUM. "*Molybdenum in Cast Iron*," W. F. Chubb, *Foundry Trade Journal*, vol. 60, no. 1180, March 30, 1939, pp. 274-277. Paper read before the London branch of the Institute of British Foundrymen. The use of molybdenum is described in a general way. Forms of molybdenum, adding molybdenum to cast iron, molybdenum pig iron, metallagraphic aspects, practical points, simple molybdenum additions, heat treatment, nickel-molybdenum irons, properties, chromium-molybdenum irons, and possible future use are the subjects discussed. The author states that the general conclusion to be drawn is that molybdenum increases the hardness and power of hardening, but that when the nickel content exceeds 1 per cent, molybdenum does not have any very pronounced refining tendency. The Iron-Molybdenum Equilibrium System diagram is included. (C.I.)

PRESSURE CASTING. "*Pressure-Casting Machine for Cast Iron*," *Foundry Trade Journal*, vol. 60, no. 1180, March 30, 1939, p. 267. This article is a description of a machine for pressure-casting cast iron. It is claimed that the castings obtained from this machine show extremely smooth surfaces, can be made in relatively thin sections, and the metal can be injected through apertures of very small sections. Drawings of this machine are included. (C.I.)

PRODUCTION. "*Gray Iron Metallurgical Practice*," C. H. Lorig, *The Foundry*, vol. 67, no. 4, April, 1939, pp. 26-28, 74-76. This is the second and concluding article from a paper presented by the author at a meeting of the Chicago Chapter of A.F.A. The first article appeared in a previous issue. Wear resistance of iron is discussed from a metallurgical standpoint. The role certain elements play in producing metallurgical structures and how this in turn affects physical properties is explained. The value of superheating and duplexing to obtain quality irons is detailed. Tables and figures are given illustrating various points. (C.I.)

STRUCTURE. "*Influence of Atmosphere and Pressure on Structure of Iron-Carbon Silicon Alloys*," A. Boyles, *Metals Technology*, vol. 6, no. 3, April, 1939, Technical Publication No. 1046, pp. 1 to 20. This paper is concerned with alloys of lower silicon content and describes the structural changes produced by melting in va-

rious atmospheres at pressures ranging from a partial vacuum up to 300 pounds per sq. in. From melts made under different atmospheres at various pressures, the following conclusions were drawn: (1) Hydrogen stabilizes the eutectic carbide in iron-carbon-silicon alloys containing very little sulphur and manganese. The effect diminishes as the silicon content is increased. (2) Melting under pressure in hydrogen increases the stabilizing effect. (3) Similar structural changes are obtained by increasing the cooling rate or by melting under pressure in hydrogen. (C.I.)

Castings

GATING AND FEEDING. "*Gating and Feeding*," A. M. Campbell, *The Iron Age*, vol. 143, no. 12, March 23, 1939, pp. 34-38. This is the first of two articles of a paper read before the Scottish Chapter of the Institute of British Foundrymen. The author very thoroughly covers the fundamentals of gating and feeding and gives numerous detail drawings of the various types of gates and feeding methods discussed. In addition to the fundamental principles which govern sound practice, the author describes the practical application of these fundamentals to the casting of monel metal, gunmetal, high tensile bronze and cast iron. Very practical article. (C.)

SCRAP LOSS. "*What Causes Scrap Losses*," W. G. Reichert, *The Foundry*, vol. 67, no. 4, April, 1939, pp. 32, 33, 88, 90. This article is from a paper presented before the 1938 regional foundry conference held at Massachusetts Institute of Technology, Cambridge, Mass. In determining why castings are scrapped, the author states that a permanent record of all test data should be kept for reference so that casting losses whether attributable to sand, metal, molding or gating may be checked constantly. Plotting daily curves of permeability, strength and moisture against scrap losses have helped considerably in reducing casting losses in many foundries. A number of drawings illustrating typical gating arrangements for stove plate and other light castings are included. (C.)

Furnaces

HEAT LOSSES. "*Surface Heat Losses*," I. G. Coutant, *The Iron Age*, vol. 143, no. 12, March 23, 1939, pp. 42-46. Often it is not fully realized just how important are the factors retarding heat emission from the outside furnaces, hot blast stoves, ovens, bustle pipes and cupolas. The influence of these factors can on occasion cause a 100 per cent variation in the amount of heat lost from outside walls even though the outside surface temperature might be the same in all cases. These losses play an important part in the working of the furnaces and maintenance and operating costs. The author describes how these losses occur and how many of them can be prevented or reduced. (F.)

Material Handling

CUPOLA CHARGING. "Charging the Cupola Mechanically," A. W. Gregg, *The Foundry*, vol. 67, no. 4, April, 1939, pp. 22-24, 73. With increasing costs of labor, materials, taxes and fixed hours of work, the need for better and more efficient equipment is universal. The most neglected departments are the melting and charging. The author describes how these departments can be improved and thus show an increase in profits on the resultant castings. However, mechanical charging involves certain fundamental principles and a complete study should be made before adding new equipment. Principal factors for such a study are as follows: (1) Analysis of present melting conditions, (2) analysis of material-handling practice, (3) layout of present buildings and facilities, (4) cost reductions, (5) better melting practice, (6) better working conditions, (7) safety, and (8) elimination of an expensive cupola building. (M.H.)

Non-Ferrous

ALLOYS. "Non-Ferrous Foundry Has Wide Range of Alloys Available," N. K. B. Patch, *The Foundry*, vol. 67, no. 4, April, 1939, pp. 34, 93, 94. This is the fourth article of the series. The author continues discussing the copper-tin-bronzes and describes the effects of impurities and other alloys on this series. Uses of this series is also detailed. (N.F.)

ALLOYS. "Non-Ferrous Foundry Practice," J. Lorig and R. T. Rolfe, *The Metal Industry* (London), vol. 54, no. 12, March 24, 1939, pp. 349-352. This is the twentieth article on this series. The authors discuss nickel silver, German silver, white brass, nickeline, etc. Of these alloys, the various subjects discussed are classification and uses, color and corrosion-resistance, non-metallic impurities, metallic additions, mechanical properties, molding technique, casting temperature and melting practice. A number of drawings illustrating methods of gating are included. (N.F.)

NICKEL BRONZE. "Lead Segregation in Nickel Bronzes," J. Marechal, *The Metal Industry* (London), vol. 54, no. 12, March 24, 1939, pp. 339-340. This article describes the result of an investigation into the occurrence of lead segregation in nickel bronzes with varying tin contents. The conclusion reached is that the amount of lead which can be incorporated in such a bearing bronze is determined by the nickel and tin contents, and that the best bearing bronzes are those containing 5 to 6 per cent tin, 4 to 5 per cent nickel and 32 to 35 per cent lead. (N.F.)

SILICON BRONZE. "Non-Ferrous Foundry Practice—Silicon Bronzes and Brasses," J. Laing and R. T. Rolfe, *The Metal Industry* (London), vol. 54, no. 11, March 17, 1939, pp. 315-319. This article is the nineteenth in this series on non-ferrous practice. The author discusses silicon bronzes in general, composition of some silicon bronzes, constitution of silicon bronze, molding practice for silicon bronze, silicon brasses, impurities in silicon brasses, tungum and molding and melting practice for tungum. Various tables and figures are given illustrating certain points discussed. A reference list which was used in preparing this article is included. (N.F.)

Refractories

FIREBRICK. "Insulating Firebrick," W. R. Kerr, *Steel*, vol. 104, no. 14, April 3, 1939, pp. 42, 45, 46. Specifications for in-

sulating firebrick at present appear somewhat confusing. The discussion of various physical and chemical properties of insulating firebrick as presented here may help clarify the factors involved. (R.)

FIREBRICK. "Suggested Insulating Firebrick Specifications," W. R. Kerr, *The Bulletin of the American Ceramic Society*, vol. 18, no. 3, March, 1939, pp. 93-96. The author discusses the following points; Chemical Composition, pyrometric core equivalent, density, dimensions, porosity, permeability, compressive and cold crushing strengths, modulus of rupture, thermal conductivity, hot lead tests, spalling and reheat shrinkage. These points are the most important of those in which both producer and consumer are interested. Certain essential points are covered and it is hoped they will serve as a guide in the preparation of specifications for insulating firebrick on a more sensible and scientific basis. (R.)

OPEN - HEARTH. "Chrome - Magnesite Brick for Open-Hearth Furnaces," J. H. Chesters and T. R. Lyman, *American Ceramic Society*, vol. 22, no. 4, April, 1939, pp. 97-104. Chrome-magnesite brick, although much improved in its physical properties, is subjected to certain limitations in service, e. g., the bursting which occurs when they become impregnated with iron oxide. Properties of a number of British and Continental bricks are given, including data on the factors determining their thermal-shock and bursting resistance. The results obtained with chrome-magnesite brick is described and an attempt is made to analyze the ultimate causes of failure. With hot metal furnaces, where the concentration of iron oxide is lower and shut downs less frequent than in cold metal furnaces, the life obtained with chrome-magnesite brick is considerably greater. (R.)

STEEL. "Pouring Pit Refractories as a Source of Non-Metallic Inclusions," D. L. McBride, *The Bulletin of the American Ceramic Society*, vol. 18, no. 3, March, 1939, pp. 86-87. The erosion of the tapping spout, reaction of the metal with the ladle brick or stopper-rod sleeve brick, and erosion of the nozzle tend to introduce non-metallic matter into the steel. The use of chrome-magnesite tapping spouts in conjunction with ladle refractories, which are highly resistant to erosion as well as to slag and metal attack, would do much to eliminate pouring pit refractories as a source of non-metallic inclusions. (R.)

Safety

EYE INJURIES. "Treatment of Eye Injuries," W. J. Bristow, *Safety Engineering*, vol. 77, no. 3, March, 1939, pp. 45-46. The treatment of industrial eye injuries from the standpoint of first aid can best be explained in simple language by giving a typical example of some of the various injuries. When a man feels that he has something in his eyes as a result of blasting or tumbling he should immediately wash his eye in cold water very much in the same manner as he would ordinarily wash his face. Numerous other examples are given with the proper remedy. (Se.)

EYE INJURIES. "Are Eyes for Sale?" "Safety Engineering," vol. 77, no. 3, March, 1939, pp. 7, 14. There is no longer an excuse for the blinding of a worker in American industry. A four point program for the prevention of eye injuries is as follows: (1) Examination of the eyes of all workers at the time of their employment and at yearly intervals thereafter;

and examination by an eye physician of reputable standing and not by an employment clerk or his assistant. (2) Provision of approved protective devices for the worker and the machine in all hazardous occupations—devices conforming with national and state heads and eye safety codes. (3) Securing continuous and conscientious use of these protective devices by workers through adequate supervision, educational effort, and mandatory rules strictly enforced. (4) Thoroughgoing compliance with state labor laws on the part of the employer, and thoroughgoing enforcement of these laws on the part of the administrators. (Se.)

LIGHTING. "Light, Sight and Safety," J. M. Ketch, *Safety Engineering*, vol. 77, no. 3, March, 1939, pp. 8-10, 16. In industry today more and more employers are paying for seeing ability. Should the lighting be too dim or too bright they are cutting down on their profitable return. In preparing suitable light the four fundamental factors that link the individual and his visual tasks are: (1) The size of the object or detail to be seen. (2) Contrast of the object with its surroundings. (3) Brightness of the object. (4) Time it takes to see. These factors are so interconnected for any individual and his tasks that within practical limits, any three of the factors can be set for him and the fourth determined. (Se.)

Steel

GRAIN SIZE. "Grain Size of Steel," N. F. Ward and J. E. Dorn, *Metals and Alloys*, vol. 10, no. 3, March, 1939, pp. 75-80. The first of two articles on this subject. This unusually comprehensive correlation gives in simple, workable form, all the information the metallurgical engineer needs to know about austenite grain size, how to determine it in shop or laboratory, how it influences the engineering properties of steel, and how it may be controlled in steel making operations. Numerous micrographs are given illustrating various points discussed. An extended reference list is included. (S.)

HEAT TREATMENT. "Measurement and Control of Furnace Atmosphere," A. E. Krogh, *Canadian Metals and Metallurgical Industries*, vol. 2, no. 3, pp. 58-60, 62, 66. In the treatment of steel, we may have one or several purposes in controlling the furnace atmosphere: (1) To eliminate scale, (2) to avoid carburization or to deposit carbon as a preliminary step in case hardening, (3) to avoid carburization, (4) to produce a particular type of surface, (5) to introduce some gas into the metal, (6) to accomplish several of these purposes simultaneously, although they each normally require different treatment. To better understand the foregoing reasons, the types of furnace used, effects on steel, gas characteristics, studies of furnace atmospheres and thermal conductivity recorders are discussed. Tables and curves on the points discussed are included. (S.)

SPECIFICATIONS. "Specs," J. H. Hall, *The Foundry*, vol. 67, no. 4, April, 1939, pp. 30-31, 82, 85, 86. The second article on this subject. The author continues discussing steel specifications. In this article, manganese limits, carbon restrictions, inspection in the green, radiography and welding restrictions are discussed. The author hopes sufficient has been said in these two articles to lead bidders to stop, look and listen before naming prices and to make adequate preparations to meet the requirements of the specifications. (S.)

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